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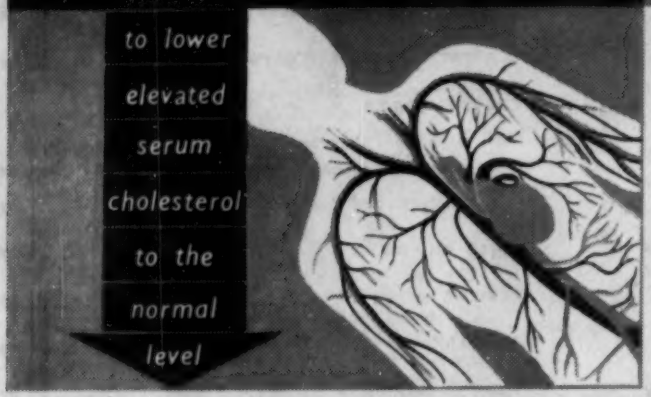

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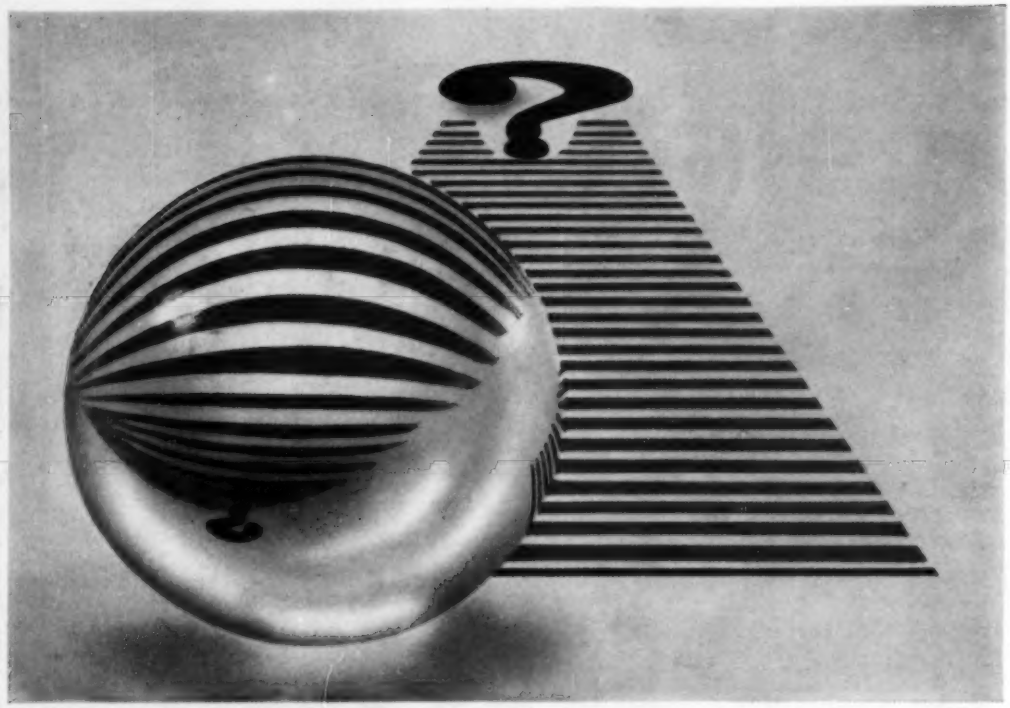

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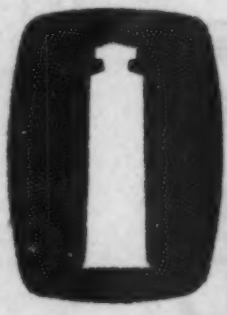

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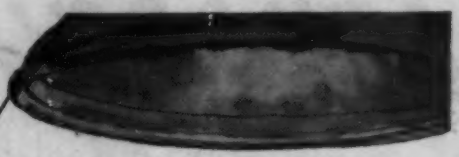

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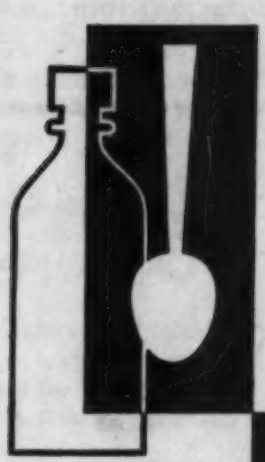

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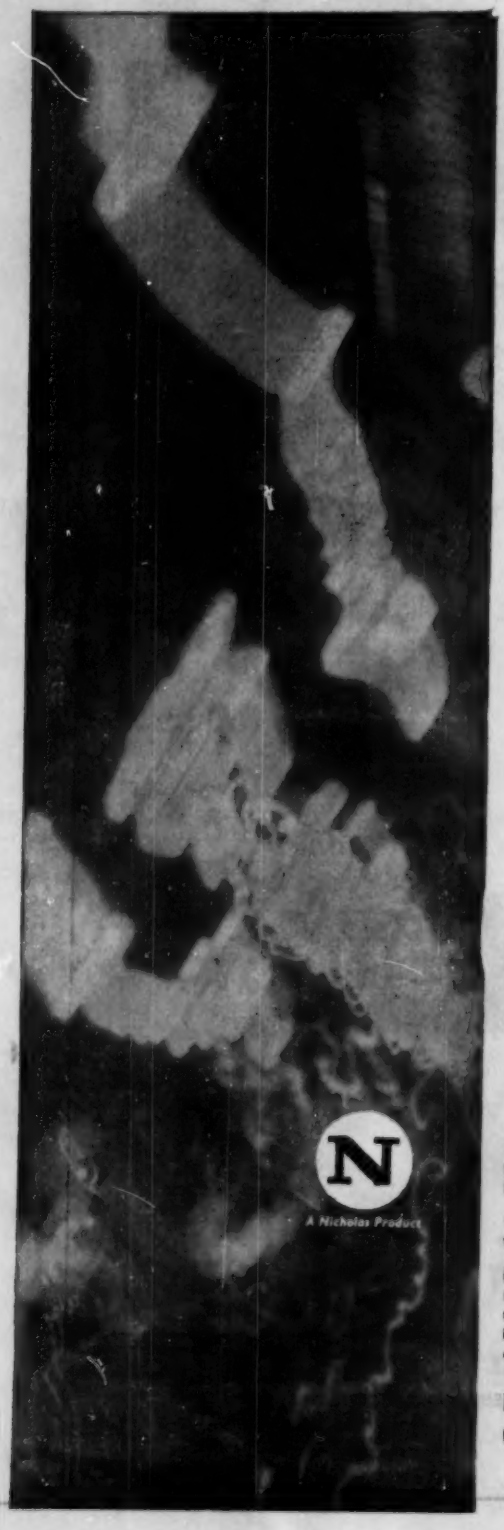

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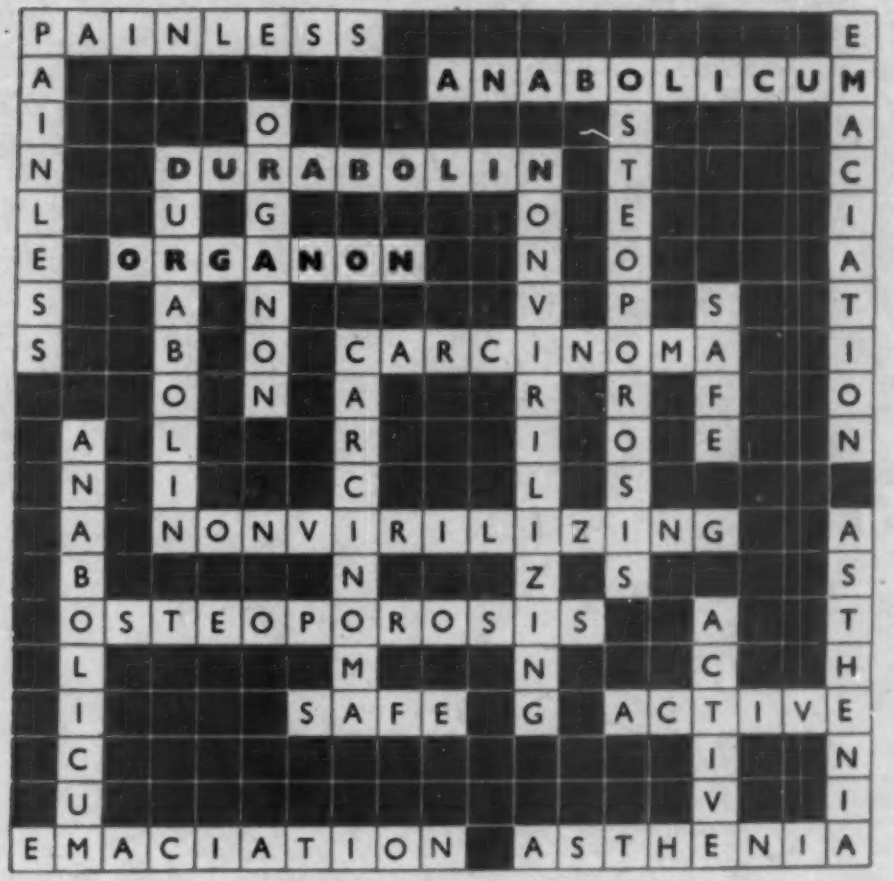

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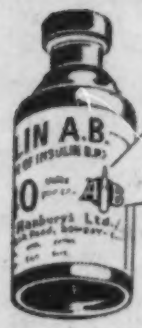

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ORIGINAL ARTICLES

HISTOPATHOLOGICAL STUDY OF THE SPLEEN AND THE LIVER IN APLASTIC ANAEMIA

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Aplastic anaemia was first described by Ehrlich in 1888 as a progressive anaemia of young adults associated with fever, haemorrhages and ulceration in the oral mucous membrane. On correlation of severe anaemia with the changes in the bone marrow which was found to be generally yellow being only slightly pinkish at the distal ends of the long bones, he postulated that in this condition red cell regeneration had not occurred due to primary depression of marrow function (Scott *et al*, 1959). It is recognised at the present time that the essential feature in aplastic anaemia is non-functioning of the bone marrow leading to refractory anaemia associated with leucopenia and thrombocytopenia that usually terminates fatally. As such the condition is a serious clinical and haematological problem.

The incidence of aplastic anaemia was apparently very low in the past. But increasing number of cases is being encountered during recent years. This may be due to real increase of incidence or to better diagnostic facilities bringing to light many cases which would otherwise go unrecognised or to both. A report of 31 cases occurring in Indians has recently appeared (Chatterjea *et al*, 1959).

As regards the aetiology, that certain myelotoxic agents such as drugs, chemicals, radiation, etc., are capable of producing aplastic anaemia is known. But the various suspected agents often affect only a minute proportion of the exposed population ; specific host factors, are, therefore, likely to be important in the pathogenesis (Scott *et al, loc. cit.*) A considerable proportion of the cases is, however, 'idiopathic'.

The haematological features and the pathological changes in the bone marrow in aplastic anaemia are well defined at present. But it appears from the literature that there is considerable diversity of opinion regarding the changes in the spleen and the liver. This will be obvious from the following account based on available literature.

Whitby and Britton (1957) : The liver and spleen are unaltered and haemosiderosis apart from that caused by multiple transfusions is unusual. Fatty changes may, however, be present in the internal organs.

Wintrobe (1956) : The spleen is not infrequently fibrous, the malpighian corpuscles small and the cells of the pulp scanty. In some cases extramedullary haemopoiesis has been observed in the spleen and the liver.

Anderson (1957): Haemosiderosis does not occur unless repeated transfusions had been given and foci of extramedullary haemopoiesis are not observed.

Boyd (1958): There are fatty changes and haemosiderosis in the liver though there is no evidence of increased haemolytic activity. (There is no description of any pathological changes in the spleen).

Bell (1956): Rare cases surviving for several years develop pigmentary cirrhosis indistinguishable from haemochromatosis even when they are not given any blood transfusions.

Adams (1951) did not find any unusual features in the spleen in four cases of aplastic anaemia apart from deposit of iron-containing pigment resulting from many transfusions.

Heaton *et al* (1957) did not find any abnormality in the liver and the spleen.

Bomford and Rhoads (1941) noted slight to moderate haemosiderosis in and hypocellularity of the splenic pulp with few red cells. In the liver they found fatty changes and haemosiderosis with slight centrilobular degeneration in one case.

Mohler and Leavell (1958) recorded the autopsy findings in 5 cases of idiopathic aplastic anaemia with hypoplastic marrow. Enlargement, fibrosis in occasional cases and haemosiderosis were noted in the liver and occasional myeloid cells and haemosiderosis in the spleen.

Chatterjea and Das Gupta (1954) recorded the evidence of myeloid metaplasia in spleen puncture smear from a case of aplastic anaemia.

During the last few years we have had the opportunity of studying the spleen and the liver in a few cases of aplastic anaemia. The results obtained are presented and discussed in this communications.

Materials and Methods

The specimens of spleen were obtained during splenectomy in five cases of aplastic anaemia; in three cases small specimens of liver were removed surgically for histological examination. The cases had been diagnosed as idiopathic aplastic anaemia on the basis of clinical and haematological investigation and follow-up study. The refractory anaemia was associated with leucopenia and thrombocytopenia in all the cases. The bone marrow was hypoplastic in three cases and more or less normocellular in two others. But in the latter, there was considerable depression of myeloid and megakaryocytic activity. In all the cases there were many plasma cells, lymphocytes and a fair number of tissue mast cells. In every case repeated aspiration biopsy of the bone marrow was carried out, smears and histological sections of the material being examined; trephine biopsy was done in Case 2. The details of these cases including the indications for splenectomy as also the results thereof have already been recorded by Chatterjea *et al* (*loc.cit.*).

Paraffin sections 5—7 microns thick, prepared from formol fixed tissues were employed for the histological study. The sections were subjected to the following: (i) haematoxylin and eosin stains, (ii) periodic acid-Schiff (PAS) reaction with ptyalin digested controls, (iii) Perl's reaction for trivalent iron, (iv) Pickworth's method for haemoglobin in one case and (v) a few histochemical methods for characterisation of certain abnormal constituents (Pearse, 1960).

Observations

The results of histological examination along with the relevant clinical data are given below.

CASE 1:

J. L. D., Indian male aged 14 years, duration of illness 15 months; haemoglobin 3·4 g. per cent; R.B.C. 0·85 million/c.mm.; W.B.C. 2,400/c.mm.; platelets 17,500/c.mm.; bone marrow hypocellular involving granular and megakaryocytic elements; plasma cells, lymphocytes and tissue mast cells increased. The patient had 26 transfusions previous to splenectomy.

Spleen—Weight 170 g., the white pulp was very prominent, the trabeculae distinct and the capsule normal.

On microscopical examination, the malpighian corpuscles showed marked reactive hyperplasia, the germinal centres being very greatly enlarged and surrounded by a narrow zone of mature lymphocytes (Fig. 1, *vide* Plate). Some of the corpuscles showed a zone of red cells consisting of widely dilated capillaries around the lymphoid tissue. The splenic pulp showed proliferation of the reticuloendothelial cells and well marked vascular congestion. Many plasma cells, a few eosinophils and occasional erythroid cells were seen in the pulp besides a few erythrophagocytic cells in the congested sinusoids. Many of the arterioles showed the presence of hyaline material in the media (Fig. 2, *vide* Plate). There was well marked haemosiderosis. Two collections of large histiocytic cells surrounded by plasma cells and lymphocytes were seen in the pulp. There was no necrosis in this area but a few giant cells were present. The cytoplasm of the histiocytes appeared to be finely vacuolated (Fig. 3, *vide* Plate).

On histochemical examination, the hyaline material in the walls of the arterioles was found to contain simple protein by Millon's reagent and a polysaccharide by the PAS reaction. This polysaccharide was not affected by ptyalin and not stained by alcian blue and by the Hale method. It was not stained metachromatically by methyl violet and the metachromasia noted on staining with toluidine blue and examination in water was not resistant to alcohol. The substance was thus a neutral mucopolysaccharide and was probably not amyloid.

CASE 2 :

R. C., Indian female aged 17 years; duration of illness about 5-6 years; haemoglobin 6·1 g. per cent; R.B.C. 2·1 million/c.mm.; W.B.C. 4,100/c.mm.; platelets 80,000/c.mm.; bone marrow hypoplastic, erythroid, myeloid and megakaryocytes depleted; plasma cells, lymphocytes, reticulum cells and tissue mast cells increased; had five transfusions before splenectomy.

Spleen—Weight 293 g.; white pulp and trabeculae prominent; several pale rounded areas elevated above the cut surface of the spleen seen (Fig. 4, *vide* Plate).

The capsule was somewhat thickened and the trabeculae were prominent and there was a condensation of fibroblasts under the capsule.

The pale areas in the splenic substance were readily visible to the naked eye in the histological sections. These were demarcated by fibrous tissue or compressed splenic tissue. There were no malpighian corpuscles inside these areas which were made up of large reticuloendothelial cells in masses or sheets and numerous haemopoietic foci consisting of megakaryocytes, myeloid and erythroid cells. There were many plasma cells and lymphocytes about these haemopoietic foci. The reticuloendothelial cells were polygonal or irregularly oval in shape and their cytoplasm was pale eosinophilic and the nucleus vesicular. One of these areas showed many large congested vascular spaces lined by endothelium and surrounded by two to three layers of flattened cells (Fig. 5, *vide* Plate). These areas were on the whole distinctly less vascular than the surrounding splenic tissue and did not contain dilated and congested sinusoids.

The rest and the major part of the splenic tissue showed many malpighian corpuscles with marked reactive hyperplasia, proliferation of the reticuloendothelial elements and congestion and dilatation of the sinusoids the linings of which were prominent. There were haemopoietic cells, histiocytes, lymphocytes, plasma cells and occasional eosinophils in the sinusoids.

Haemosiderin and haemoglobin were detected in large amounts in large histiocytic cells and extracellularly. The former was detected by Perl's reaction and the latter by the Pickworth method. The arterioles were thickened but showed no degenerative changes.

Liver—The hepatic parenchyma cells were unequal in size and many of these and the Kupffer cells contained haemosiderin. Small foci of round cell infiltration and a few megakaryocytes, erythroid and myeloid cells were seen in the sinusoids. There was an area containing distorted hepatic parenchyma cells, and a bile duct infiltrated and surrounded by lymphocytes, plasma cells, haemopoietic cells, eosinophils. This was probably a large haemopoietic focus causing distortion of liver cells and was associated with round cell infiltration.

There was a patchy depletion of glycogen in the parenchyma cells. The portal tracts were normal.

CASE 3 :

A. N., Indian male child aged 6 years; duration of illness 8 months; haemoglobin 5·8 g. per cent; R.B.C. 1·56 million/c.mm.; W.B.C. 2,500/c.mm.; platelets 13750/c.mm.; bone marrow slightly hypercellular, normoblastic; granulopoiesis and megakaryocytes depressed; plasma cells increased. Had two transfusions before splenectomy.

Spleen—Weight 40 g.

The capsule was somewhat thickened and the trabeculae prominent. The malpighian corpuscles were very large in size showing well marked reactive hyperplasia. There was a zone of red cells around some of the malpighian corpuscles due to congestion and haemorrhage. The splenic pulp showed marked dilatation and congestion of the sinusoids, the endothelial lining of which was hypertrophied. Besides the blood cells, the sinusoids contained occasional erythroid cells, haemosiderin containing histiocytes and erythrophagocytes.

Liver—Most of the portal tracts showed increase of fibrous tissue and fibrous bands extended from one portal tract to another in most of the areas of the section. The larger fibrous bands showed round cell infiltration and small bile ducts. There were small foci of necrosis with round cell infiltrations. The hepatic parenchyma cells were unequal in size but no fatty changes were present. There were no haemopoietic foci; the Kupffer cells were normal and the sinusoids not congested. No haemosiderin could be detected.

CASE 4 :

R. H., Indian male aged 19 years; duration of illness 1 year; haemoglobin 3·2 g. per cent; R.B.C. 0·9 million/c.mm.; W.B.C. 4,700/c.mm.; bone marrow hypoplastic with increase of plasma cells and lymphocytes. Had six blood transfusions in all before splenectomy.

Spleen—Weight 72 g.

The capsule was thick and the trabeculae prominent. The malpighian corpuscles were mostly normal. A few appeared to be surrounded by a 'pool of blood'. The splenic sinusoids were widely dilated and congested. There was hyperplasia of the reticuloendothelial cells and the sinusoids contained a fair number of eosinophils, many plasma cells and occasional erythrophagocytes. A small number of myeloid and erythroid cells was seen. There was considerable haemosiderosis. The media of many of the arterioles appeared thickened but there was no deposition of hyaline material.

CASE 5 :

B. K. B., Indian male aged 23 years; duration of illness 3 years; haemoglobin 3·77 g. per cent; R.B.C. 0·90 million/c.mm.; W.B.C. 1,700/c.mm.; platelets 3,840/c.mm.; bone marrow cellular, normoblastic, granulocytic cells depressed and megakaryocytes rare; tissue mast cells increased. Had four blood transfusions in all before the operation.

Spleen—Weight 211 g., white pulp distinctly seen and the trabeculae prominent.

On microscopical examination, the capsule was moderately thickened and the trabeculae distinctly so. One of the trabeculae contained many haemosiderin containing histiocytes. The Malpighian corpuscles were normal in size but a few showed large germinal centres. There was vascular congestion around the malpighian corpuscles with haemorrhages around a few. The sinusoids were dilated and congested with blood. Besides prominent reticuloendothelial cells, the splenic pulp

contained many eosinophils and plasma cells; and there were some haemosiderin containing cells, erythrophagocytes and some erythroid cells, viz., early and late normoblasts and occasional megakaryocyte.

Liver—The portal tracts showed increased cellularity due to increase of round cells and fibroblasts. The liver parenchyma cells were unequal in size and a fair number of binucleated cells were present. There were many foci of round cells and histiocytes in the sinusoids; some of these foci contained necrosed liver cells (Fig. 6, *vide* Plate). Hepatic cells and Kupffer cells showed the presence of haemosiderin, the amount being larger in the periportal areas than at the centre of the lobule.

Discussion

The present study has shown considerable abnormalities in the spleen and the liver in the cases of idiopathic aplastic anaemia. Some of the findings are in accord with those of the earlier workers but others do not appear to have been recorded previously. The significance of the pathological changes in this disease of unknown aetiology may be conveniently discussed in the light of our present knowledge regarding the causation of the individual changes.

Haemosiderosis was noted in all the cases. The patient having only two transfusions had small amount of pigment in the spleen and none in the liver. The others having 4-6 transfusions had haemosiderosis of the spleen and the liver. The patient having 26 transfusions showed considerable deposit of pigment in the spleen. There was thus some correlation of siderosis with the number of transfusions. But it must be mentioned that the number of transfusions was by no means comparable to that employed by workers in Western countries. Haemoglobin was found in one case in the spleen ; this was apparently due to haemorrhage from large vascular spaces in that organ.

The arterioles showed thickening in one case and hyaline deposit in the media in another. The latter was not amyloid but a mucopolysaccharide that did not show metachromasia with methyl violet. Haemorrhage was noted around the malpighian corpuscles in a few cases. Sickle cell anaemia is one of the conditions in which such haemorrhage may occur and we had noted this in one case of thalassaemia (Mukherjee *et al*, 1959). In these cases of aplastic anaemia it appears probable that this was due to thrombocytopenia.

Haemopoietic foci were found in all the cases—relatively few in four and numerous in one—in the spleen and/or the liver. The case showing extreme degree of extramedullary haemopoiesis had pale tumour-like masses in the spleen and a large focus in the liver. These tumour-like masses comprised large reticulo-endothelial cells and haemopoietic foci and some of these showed large cavernous angioma-like blood spaces lined by endothelium. Such tumour-like areas of haemopoietic tissue do not appear to have been reported in idiopathic aplastic anaemia with hypoplastic marrow. In view of the hypoplasia and inactivity of the bone marrow, extramedullary haemopoiesis may be regarded as compensatory phenomenon. Such haemopoietic foci have been recorded in a variety of clinical conditions such as myelosclerosis, myelofibrosis and miscellaneous conditions including thalassaemia (Heller *et al*, 1947 ; Mukherjee *et al*, *loc. cit*). In view of the fact that haemopoietic foci were most numerous in the case with the longest duration, it appears possible that this development depends on the patient surviving a reasonably long time and on his reaction or resistance to the disease.

The liver did not show any fatty changes inspite of the fact that there was grave anaemia lasting for fairly long periods. But there were foci of necrosis in two cases associated with increase of fibrous tissue (? post-necrotic scarring) in one. Focal necrosis with round cell infiltration could possibly be due to an infective process ; there was, however, no history of jaundice in any of the cases. One of the cases had no haemosiderin in the liver and the other only small amounts. Thus necrosis and fibrosis were probably not due to increased deposit of iron containing pigment. These changes were apparently due to the anaemic process itself and are in conformity with the findings of earlier workers (Mohler and Leavell, *loc. cit.*).

Marked reactive hyperplasia of the malpighian corpuscles was noted in three of the five cases of the present series. The germinal centre of the lymphoid follicle showed marked hyperplasia and there was a narrow rim of mature lymphocytes around it—the picture having a superficial resemblance to giant follicular lymphoma. In the remaining two cases there was no atrophy of lymphoid tissue and the malpighian corpuscles were normal with occasional ones showing prominent germinal centre. It is probable that this hyperplasia of malpighian corpuscles was due to increased demand for lymphocytes. It is known that lymphocytes increase in chronic infections and inflammatory conditions, during convalescence and that these are concerned with production of antibodies. The increase of lymphoid elements in the spleen may also be manifestation of immunological response to an unknown infective agent or to a foreign substance. Certain metabolic factors and autoantigens may lead to increase of lymphoid tissue in organs, e.g., in the thyroid in hyperthyroidism and in Hashimoto's disease (Boyd, *loc.cit.*). The other possibility is that the depression of myeloid

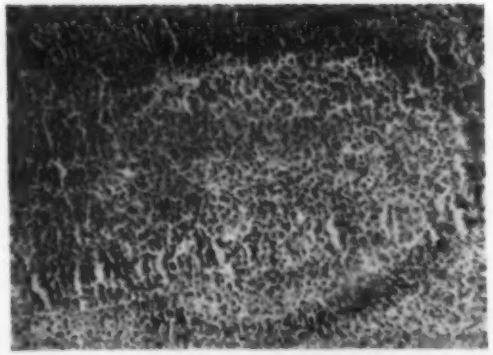

Fig. 1—Section of spleen (Case 1) showing marked reactive hyperplasia of the malpighian corpuscle (low power)

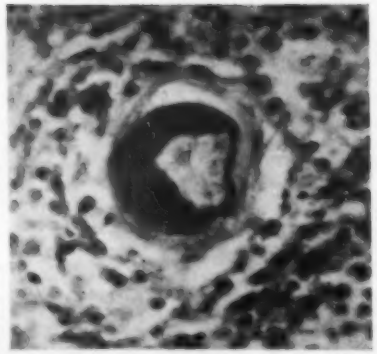

Fig. 2—Section of spleen (Case 1) showing hyaline material in the media of a splenic arteriole (high power, PAS and haematoxylin)

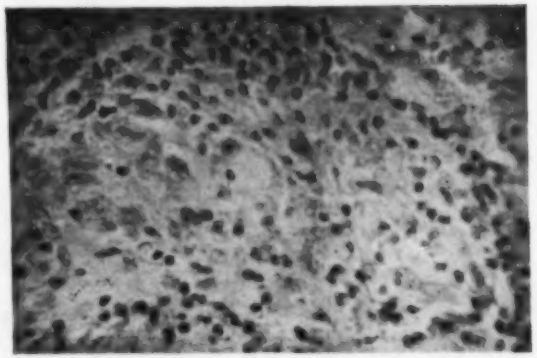

Fig. 3—Section of spleen (Case 1) showing granulomatous collection in the spleen (high power)

Fig. 4—Section of spleen (Case 2) showing pale, rounded tumourlike areas and prominent white pulp

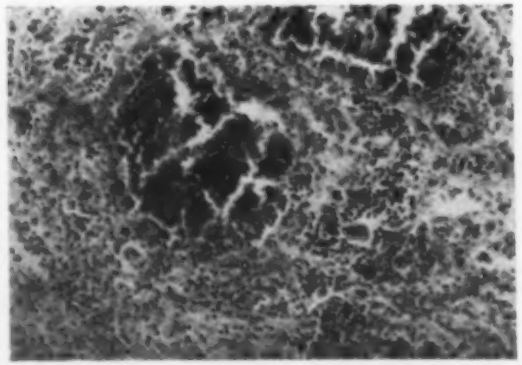

Fig. 5—Section through one of the tumourlike areas in the spleen (Case 2) showing two large vascular spaces, haemopoietic and reticulo-endothelial cells (low power)

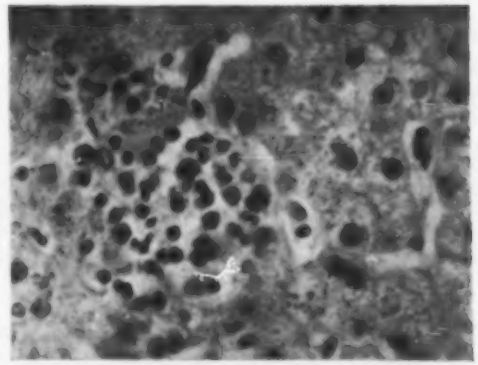

Fig. 6—Section of liver (Case 5) showing a focus of round cell infiltration (high power)

Fig. 1A—Arteriogram showing the presence of functioning arterial system.

Fig. 1B—Arteriogram showing well-formed and even presence of digital vessels of the great toe

Fig. 1C—Arteriogram showing that the blood vessels in the amputated limb have stopped short at the level of the neck of the fibula. Air bubble was injected to demonstrate patency of the arteries

Fig. 2—Arteriogram showing a classical segmental block

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elements may lead to a reciprocal increase of lymphoid cells (Dameshek, 1952). Certain other findings in the spleen may also be considered, viz., proliferation of reticuloendothelial cells in the pulp associated with hypertrophy (i.e. increase in the size of the cell and its nucleus) of the lining endothelium of the congested sinusoids, presence of foci of histiocytes surrounded by round cells and increase of plasma cell and eosinophils. These when considered together with the reactive hyperplasia of the malpighian corpuscles tend to suggest that some factor that leads to increased lympho-reticular activity is operating in these cases of idiopathic aplastic anaemia. The nature of this factor is, however, unknown though certain possibilities have been mentioned above. These pathological changes could be brought about along with the non-functioning of the bone marrow by the aetiological agent of these cases of aplastic anaemia or be caused by complications of long continued anaemia. That such changes have not been noted by workers in other countries could possibly be due to the difference in the aetiological background and the nature of complicating agent on account of the difference in the environmental factors in our cases.

Summary

Histopathological study of specimens of spleen and liver obtained surgically from a small series of cases of idiopathic aplastic anaemia has shown considerable pathological changes some apparently not recorded previously.

The malpighian corpuscles often showed reactive hyperplasia and were surrounded by a zone of highly congested sinusoids and occasionally by a zone of haemorrhage from these sinusoids. There was prominence of the lining cells of the sinusoids which were congested and the pulp showed hyperplasia of the reticular elements. There was often an increase of plasma cells and eosinophils and a few erythrophagocytes could usually be seen. The trabeculae were pominent and one case showed increase of fibrous tissue. There were foci of histiocytes surrounded by round cells and hyaline changes in the media of arterioles in one case.

Small foci of necrosis associated with round cell infiltration and increase of fibrous tissue were noted in the liver in two cases but fatty changes were absent as a rule.

Haemosiderosis and extramedullary haemopoiesis in the spleen and/or the liver were frequent. The former could be correlated with the number of transfusions administered previous to splenectomy. In one case, pale, rounded tumour-like islands comprising haemopoietic tissue and large histiocytic cells were noted in the grossly enlarged spleen. Some of these areas showed numerous dilated and congested blood spaces.

Significance of the findings has been discussed.

Acknowledgment

Our grateful thanks are due to Dr. K. K. Ghosh, Professor of Surgery and Dr. S. Banerjee, Visiting Surgeon, Medical College, Calcutta, for their invaluable collaboration. Sincere appreciation is due to Dr. Sushiela Swarup, Dr. R. N. Ray and Dr. Sandhya Ghosh for their help in the study. We are indebted to the Indian Council of Medical Research for supporting the Haematological Unit under one of us (J.B.C.).

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SERUM CHOLESTEROL STUDIES AMONG GUJRATIS

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Fat plays an important role in human diet. Out of the total calories derived from diet, dietary fat contributes a fair amount of energy. Keys *et al*

(1950), Gordon *et al* (1957) and Keys and Anderson (1957) have shown that dietary fat has marked effect upon the serum cholesterol level in man. Possible ill effect of the use of highly unsaturated fat has already been shown by Sinclair (1957). The great increase in serum cholesterol concentrations in animals receiving hydrogenated vegetable fat, has also been demonstrated at Nutrition Research Laboratories, Coonoor (1957-58). Groen *et al* (1952) found that an exclusively vegetarian diet had the effect of reducing cholesterol value although the diet was rich in vegetable fat. Keys *et al* (1950) and Groen *et al* (*loc. cit.*) have shown that subjective factors such as mental over-exertion, emotional tension, etc., have marked effect in promoting hypercholesterolaemia.

India is an extensively wide country where various types of fat are used in the diet. Important edible fats include groundnut oil, til oil, hydrogenated vegetable fat, coconut oil and mustard oil, in addition to animal fats like ghee, butter, curd and butter-milk. The dietary fats have different degrees of saturation expressed in terms of 'iodine value'. The iodine values of the common fats used in India (Boyd and Roy, 1926 ; Bose and De, 1936) are shown in a tabular form.

Type of oil	Iodine value
1. Groundnut oil ...	85 to 99
2. Mustard oil	96 to 108
3. Til oil	105 to 115
4. Coconut oil	7 to 10
5. Pure ghee	30 to 35
6. Hydrogenated oil ...	much less; depends on the degree of hydrogenation

In view of the above factors, it was thought that normal persons in this part of the country, may have different serum cholesterol levels. The basic data are inadequate for reference purpose. The present study was, therefore, undertaken to provide the basis for precise evaluation of total blood serum cholesterol in normal persons of various age-groups.

Material and Methods

The blood samples in 169 subjects (117 males and 52 females) were random specimens collected by going to their residence. Most of the samples were collected between 9 and 10 A.M. Complete record was made of age, sex and amount of fat (vegetable and animal) consumed per day. In case of women, it was also ascertained that they were neither pregnant nor menstruating at the time of collection of blood samples. A urine analysis for albumin and glucose was done in every case in order to exclude undetected renal disease or diabetes.

The modified method of Bloor *et al*, quoted by Kolmer (1951), was employed for estimation of total cholesterol and cholesterol ester.

Results

The average daily intake of dietary fat in the present series was very variable. It ranged from 10 to 100 g. per day, out of the 120 subjects, 55 (46·0 per cent) had daily intake of less than 24 g., 37 (30·8 per cent) had less than 49·0 g., 22 (18·2 per cent) had less than 74 g. and 6 (5 per cent) had less than 99 g. The intake of over 100 g. was not noticed in any of the subjects. The average intake was 45 g. per day. The dietary fats used in this area consisted mainly of groundnut oil, til oil, hydrogenated vegetable oil, pure ghee, and milk and its preparations. The majority of the subjects have replaced pure ghee (animal fat) by hydrogenated fat, in view of their adverse economic circumstances.

Reference to Indian literature showed that no major attempts have been made to establish normal data for blood serum cholesterol level in various parts of the country. Boyd and Roy (1926) and Bose and De (1936) studied serum cholesterol level at Calcutta, while Ghose (1933) studied serum cholesterol at Lucknow. Gopalan and Ramnathan (1956) studied serum cholesterol level of low-income and high-income groups at Coonoor. Nath *et al* (1957) studied serum cholesterol level of Defence personnel at Delhi. Padmavati *et al* (1958) studied serum cholesterol level among the industrial workers and rural population of Delhi area. The results are summarised in Table 1. It was not possible to compare results of the above mentioned workers, as the techniques used by them were very much different. The present study showed that the normal range of blood serum cholesterol varies from 111·4 to 371·8 mg. per cent, with average value of 219±49·2 (S.D.) in cases of males and 211·5±44·4 (S.D.) in case of females. Comparison of our results with Indian data shows that our values are higher than the values reported by other workers. Our results show closer resemblance to those of Alexander and Ulla (1954) in their study of serum cholesterol level among Minnesota population. The results have been summarised in Table 2.

The method employed by the authors in the determination of serum cholesterol study was practically the same with very little modification from that employed in the Minnesota study.

Tables 3 and 4 show that there is an increase in the total cholesterol value between the age of

20 and 59. They also show a distinct rise of serum cholesterol level with age. The sharp rise after the age of 40 is also quite evident. The above findings are in agreement with the work of Keys *et al* (1950).

TABLE 1—SHOWING SERUM CHOLESTEROL LEVELS IN NORMAL INDIAN MALES

Place, worker and year	Method used	Total serum cholesterol (mg. %)
Calcutta Boyd and Roy, 1926	Myers Wardell	82 to 184
Lucknow Ghose, 1933 ...	Bloor	110 to 180
Calcutta Bose and De, 1936	Myers Wardell	120 to 160 Mean 140
Baroda, 1950 ...	Bloor, Pelham and Allen	219±49·2 (111·4 to 329·7)
Coonoor Gopalan and Ramnathan, 1956	Abel and Kendall	Low income—121 to 126 High income—132 to 170
Delhi Nath, Gupta and Iyer, 1957	Sperry and Webb	Defence personnel—177 to 215
Delhi Padmavati *et al*, 1958	Iron reagent method (Zak)	Industrial worker—168·7 Rural population—179·3

TABLE 2—SHOWING SERUM CHOLESTEROL VALUES AS FOUND BY THE AUTHORS AND ALEXANDER AND ULLA

No. of subjects studied	Age	Serum cholesterol value (mg. %)		
		Present series		Minnesota data (Mean and S.D. value)
		Range	Mean and S.D. value	
61	25	114 —275·9	191·4±39·1	194±34
37	35	126 —371·8	219 ±41·7	200±43
9	45	138·7—324·3	224·5±43·8	236±37
10	55	170·3—329·7	239·6±43·8	256±46

TABLE 3—SHOWING MEAN SERUM CHOLESTEROL LEVELS IN RELATION TO AGE IN MALES

Age (years)	No. of cases	Total serum cholesterol (mg. %)	Cholesterol ester (mg. %)
20—29 ...	61	191·4±39·1 (111·4—275·9)	119·9±36·4 (73·7—208·8)
30—39 ...	37	219·1±41·7 (126—371·8)	151·3±38 (93·3—264·4)
40—49 ...	9	224·5±43·8 (138·7—324·3)	142·8±42 (88·6—231·0)
50—59 ...	10	239·6±43·8 (170·3—329·7)	143·9±42 (81·5—237·9)
Below 40 ...	98	201·8 (111·4—371·8)	131·7 (73·7—264·4)
Above 40 ...	19	232·4 (138·7—329·7)	143·4 (81·5—237·9)
20—59 (average) ...	117	219 ±49·2 (111·4—371·8)	139·5 (73·7—264·4)

TABLE 4—SHOWING MEAN SERUM CHOLESTEROL LEVELS IN RELATION TO AGE IN FEMALES

Age (years)	No. of cases	Total serum cholesterol (mg. %)	Cholesterol ester (mg. %)
20—29 ...	29	193·4±42 (120—256·0)	122·5±41·3 (75·0—184·0)
30—39 ...	14	217·8±49·1 (173·6—278·6)	149·4±34 (116·8—205·2)
40—49 ...	9	223·4±39·5 (178·6—294·2)	150·8±49·8 (91·82—241·2)
Below 40 ...	43	208·6 (120—329·7)	135·9 (75—241·2)
Above 40 ...	9	223·4 (178·6—294·2)	150·8 (91·82—241·2)
20—49 (average) ...	52	211·5±44·4 (120—294·2)	140·9 (75·0—241·2)

Table 5 shows that in the present series the relation between the serum cholesterol level and dietary fat intake is not significant. The highest value of total cholesterol is observed with fat intake of 38 g. and lowest value with fat intake of 10 g. The findings of Keys *et al* (1957) that the differences in high and low fat intakes were most marked after 40 years, could not be confirmed in the present study.

TABLE 5—SHOWING MEAN SERUM CHOLESTEROL LEVELS IN RELATION TO DAILY INTAKE OF FAT

Fat intake g./day	No. of cases	Total serum cholesterol (mg. %)	Cholesterol ester (mg. %)
	(A) MALE		
0—24 ...	55	203 (111·4—343)	127·7 (75·82—231·3)
25—49 ...	37	213·4 (113·0—371·8)	137·5 (79·7—264·4)
50—74 ...	22	207·4 (122—271)	128·25 (78·5—178·5)
75—99 ...	6	187·9 (168—267)	144·0 (105—194)
	(B) FEMALE		
0—24 ...	19	195·1 (120·6—278·6)	171·1 (75·0—225)
25—49 ...	21	223·5 (130—329)	149·7 (88·8—241·2)
50—74 ...	8	229·1 (180·8—272·3)	136·8 (104—181·6)

Esterification of cholesterol occurs in the liver. The cholesterol ester fraction is 50-75 per cent of the total cholesterol (Gradwohl, 1956). It has been observed that the ester fraction is frequently reduced in proportion to the extent of liver damage. It is therefore regarded as one of the most important liver function tests. 100 males have been studied from this point of view. It was observed that 63 males had their ester value over 60 per cent, 19 males over 50 per cent and 18 males over 40 per cent. The lowest value recorded was 47·82 per cent, and highest value was 87·72 per cent.

DISCUSSION

Among the factors that influence the serum cholesterol level in men, diet and hormones seem to adjust the level to a great exent. The human diet is mainly composed of protein, carbohydrate, fats and vitamins. The above factors have been studied at length by various investigators (Portman and Stare, 1959).

The effect of concentrations of various proteins together with presence or absence of various amino acids at various levels, on serum cholesterol level has been studied. The effect of fats obtained from various sources and those differing in chemical structure has also been studied in regard to their relation to serum cholesterol level. It has also been shown that the presence or absence of certain vitamins may also affect the serum cholesterol level. All these experiments have however been carried out in animals, namely, rats and monkeys, and therefore conclusions derived from these studies can only be applied in the human with certain restrictions.

The effects of secretions from various endocrine organs, viz., thyroid, ovaries, pancreas, adrenal and pituitary have been universally accepted. The subjects selected for the present study showed no apparent pathological lesions for hyper- or hypo-activities of the above glands. They are therefore considered as 'normals' for the purpose of this study.

In the present study, it has been observed that there is an increase of serum cholesterol level both in male and female subjects. As this observation appears in both series, males and females, there is reason to beieve that hypercholesterolaemia with advance in age may be mainly due to the hypo-activity of the thyroid gland.

Lecithins, which are phospholipids, are important agents in transportation of fats (Harper, 1959). In the absence of these substances, fats remain in suspension in plasma. Eggs, fish, meat, etc., are rich in lecithin. The Gujrati diet, which does not contain the above substances, is deficient in lecithin. A slightly high serum cholesterol level in the present study may partly be accounted for by the low lecithin level in the diet.

CONCLUSION AND SUMMARY

The results of the present study indicate that the normal range of blood serum cholesterol in Gujratis varies from 111·4 to 371·8 mg. per cent, with an average value of 219±49·2 (S.D.) for males and 211·5±44·4 (S.D.) for females. The study shows that there is a sharp rise of serum cholesterol level between the age of 20 and 59 years. The dietary fat intake study in Gujratis points to no sigficant relationship between the serum cholesterol level in blood and dietary fat intake. The ester fraction has been studied in 100 males.

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PREDNISONE IN THE TREATMENT OF CHRONIC RENAL OEDEMA

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Chronic renal oedema has been defined by Rennie (1956) as a very persistent oedema associated with gross proteinuria, a fall in the level of plasma albumin and a rise in the plasma cholesterol. Renal functions may or may not be impaired and hypertension may or may not be present. Management of such a condition includes symptomatic relief which necessitates relief of oedema and permanent cure. A salt-free high-protein diet, along with various diuretics, different plasma-expanders like human concentrated albumin and dextran, pyrexial therapy and nitrogen mustard have been tried, and though some cases temporarily respond by diuresis to one or the other measure, many however remain waterlogged (Potters 1904; Barnes *et al*, 1950; Byrne, 1952; Mendel and Mcgill, 1958; Bhattacharyya, 1957; Holland *et al*, 1958). Steroid therapy has proved useful in many such waterlogged cases (Arneil, 1956; Holland *et al*, 1958). Prognosis of nephrotic cases has always been unsatisfactory but the introduction of steroid therapy seems to have improved it (Pechioli and Cheli, 1959), though sufficient time has not yet elapsed to pronounce a final judgment on the efficacy of steroids.

This paper incorporates a short-term study of the results of treatment of 19 cases of chronic renal oedema with prednisone with reference to oedema, diuresis, proteinuria and serum cholesterol levels.

MATERIAL AND METHOD

This study included 19 patients, 14 male and 5 female. Their ages ranged from 3½ to 35 years. All the cases had oedema, proteinuria, hypoalbuminaemia and hypercholesterolaemia (Table 1). They were under treatment either in or outside the hospital with salt-free high protein diet, fluid restriction, appropriate diuretics and antibiotics as and when necessary. None had pyrexial therapy or plasma expanders. Prednisone therapy was instituted only when the condition of the patients remained stationary or showed deterioration.

While on prednisone therapy, the cases were on the same dietetic regime as before instituting this therapy. The dosage was variable. In general, treatment was started with a higher initial dosage which was gradually tailed off. The duration of treatment was from 14 to 35 days. When response to treatment for 2 weeks was unsatisfactory, the therapy was terminated. The administration of the drug was continuous. Antibiotics were used on the suspicion of infection No extra potassium salt was added to the regime except what the patients had with their food and no fruit juice was given.

Blood protein and serum cholesterol were estimated before and after treatment. Blood urea was estimated before therapy. Urine examination and recording of weight were done before, after and every week during therapy. Fluid intake and urinary output were recorded daily. Attention was directed towards detection of any side-effect of the drug used.

RESULTS

The results of treatment are shown in Table 2.

Diuretic—Out of 19 cases, only 14 co-operated in keeping the record of urinary output. The maximum average daily fluid depletion from the body through urine (urinary output minus fluid intake divided by the number of days) was 29·9 oz. (Case 4) and the minimum was 0·8 oz. (Case 12).

Oedema—Complete response (complete freedom from oedema and ascites) was found in 10 cases

TABLE 1—ANALYSIS OF THE CASES UNDER REVIEW BEFORE TREATMENT WITH PREDNISONE

Serial No.	Age (years)	Sex	Oedema		Ascites	Weight (lb.)	Blood protein (g.%)			Blood urea (mg. %)	Serum cholesterol (mg.%)
			Degree	Duration (months)			Total	Albumin	Globulin		
1	3½	M	++++	2	+	27	4·5	2	2·5	30	880
2	6	F	++++	4	++	36	4·2	2	2·2	36	320
3	4½	F	+++	8	++	36	3	0·8	2·2	52	740
4	12	M	+++	4	++	20	3	1·2	1·8	28	460
5	4	M	+++	—	+	42	4	1·6	2·4	44	620
6	6	M	+++	1	+	42	5	1·4	3·6	28	460
7	6½	M	++	3/30	−	40	5	1·4	3·6	24	440
8	28	M	++	1	−	123	5	2	3	48	324
9	30	F	+++	12	+	100	4·5	2	2·5	28	480
10	26	M	++++	6	++	116	4·25	2	2·25	60	680
11	16	M	++++	1½	−	130	3·5	1·5	2	35	346
12	4	F	++	—	−	33	4·5	2	2·5	32	280
13	21	M	+++	5	++	142	4·5	2	2·5	44	234
14	16	M	+++	5	+	98	3	1·2	1·8	32	280
15	16	M	+++	—	+	114	5	2·2	2·8	42	460
16	4	F	+++	1	+	32	4·5	2·2	2·3	34	380
17	22	M	+++	—	+	115	4	1·2	2·8	40	380
18	23	M	+++	1	+	162	3	1·6	1·4	56	400
19	35	M	+	15/30	−	134	5	2·5	2·5	40	260

TABLE 2—ANALYSIS OF THE RESULTS OF TREATMENT WITH PREDNISONE

Serial No.	Oedema response	Proteinuria	Average fluid depletion (oz.)	Weight (lb.)	Blood protein (g. %)			Serum cholesterol (mg%)	Prednisone therapy			Response
					Total	Albumin	Globulin		Daily dose (mg.)	Total dose (mg.)	Duration of treatment (days)	
1	C	0	5	22	5·5	3·5	2	260	7·8	140	18	Excellent
2	C	0	4·2	25	5	3	2	260	4·7	242·5	51	Excellent
3	C	0	5	30	5·25	3·25	2	176	5·1	92·5	18	Excellent
4	C	+	20·0	66	5	3	2	196	13·4	187·5	14	Good
5	C	0	9·6	28	5·5	3·4	2·1	170	12·4	420	34	Excellent
6	C	0	3·4	32	5·5	3	2·5	280	12·1	255	21	Excellent
7	C	+	9·4	32	5·25	2	3·25	420	9·1	155	17	Good
8	C	+	—	109	5·25	3·25	2	196	20·3	305	15	Good
9	P	+	10·8	86	6	4	2	310	13·4	390	29	Good
10	P	++	7·8	110	—	—	—	460	17·7	247	14	Poor
11	P	+++	—	116	—	—	—	212	18·6	260	14	Poor
12	P	0	0·8	33	5·5	3·5	2	170	8·9	125	14	Good
13	C	0	17·6	130	6	3·2	2·8	216	16·7	251	15	Excellent
14	I	+	—	96	—	—	—	180	19·3	270	14	Poor
15	P	+	6·3	108	5·5	3	2·5	420	22·4	380	17	Good
16	I	0	0·9	32	—	—	—	190	16·6	650	25	Fair
17	P	++	6·7	110	—	—	—	200	16·6	265	16	Poor
18	I	0	—	153	—	—	—	308	30·3	1030	34	Fair
19	C	0	—	138	6·5	3·5	3	230	23·7	455	19	Excellent

Under oedema response: C=complete; P=partial; I=insignificant.

(Case 1-8, 13, 19) ; fair response (partial loss of oedema and freedom from ascites) was seen in 6 cases (Case 9-12, 15, 17) and 3 cases (Cases 14, 16, 18) had insignificant response (only slight reduction of oedema with ascites).

Proteinuria—Urine was completely free from protein in 10 cases (Cases 1-3, 5, 6, 12, 13, 16, 18, 19) ; there was proteinuria (+) in 6 cases (Cases 4, 7-9, 14, 15), proteinuria (+ +) in 2 cases (Cases 10, 17) and proteinuria (+ + +) in one case (Case 11).

Oedema and proteinuria—The cases might be considered in terms of response to oedema and proteinuria taken together and classified as follows :

Excellent (oedema and proteinuria nil) in 7 cases (Case 1-3, 5, 6, 13, 19).

Good (oedema + with proteinuria nil, or oedema nil with proteinuria +) in 6 cases (Cases 4, 7-9, 12, 15).

Fair (oedema + + with proteinuria nil or, oedema nil with proteinuria (+ +) in 2 cases (Cases 16, 18).

Poor (oedema + + with proteinuria or, oedema with proteinuria + +) in 4 cases (Cases 10, 11, 14, 17).

Thirteen cases (excellent and good) responded satisfactorily to treatment.

Serum cholesterol—The pretreatment serum cholesterol values ranged from 234 to 880 mg. per cent and the fall ranged from 18 to 620 mg. per cent. The maximum fall in percentage of the pretreatment values (pretreatment value minus post-treatment value divided by pretreatment value × 100) was 76·2 and the minimum 4·5. Fall of serum cholesterol amongst the 'excellent' cases ranged from 7·7 to 76·2 per cent, 'good' cases from 4·5 to 57·4 per cent, 'fair' cases from 23 to 50 per cent, and 'poor' cases from 32·3 to 47·4 per cent. No relationship could be found between fall of serum cholesterol value and response of waterlogging and proteinuria taken together. Reduction of serum cholesterol value has been noted by Maxwell (1958), Ree (1959) and Railey (1956).

Blood protein—All the thirteen cases belonging to the 'excellent' and 'good' categories had their blood protein estimated after prednisone therapy. All of them showed a rise of total protein and of albumin percentage in blood with a change in the albumin-globulin ratio. Elevation of blood albumin has been observed by other workers (Holland *et al*, 1958 ; Maxwell, 1958 ; Ree, 1959 ; Pechioli and Cheli, 1959).

Weight—Fifteen cases had loss of weight from 2 to 24 lb., three had no change and one recorded a gain of 4 lb. (Case 19). The last had marked proteinuria but slight oedema. Most cases developed increased appetite and consumed more food. This helped them to put on weight and compensated to some extent the loss of weight due to fluid loss.

Age—Response in children is claimed to be more than that in adults (Rennie, 1956). In this study of the 9 children aged from 3½ to 13 years, 7 had satisfactory response (5 cases 'excellent' and 2 cases 'good') ; of the 10 adults, 5 had satisfactory response (2 cases 'excellent' and 3 'good'). Baxter *et al* (1956), however, found that the adults responded equally well as the children.

Dosage and Duration of Administration

Different workers have tried different schedules of prednisone therapy—continuous, intermittent and in definite cycles ; sudden withdrawal and gradual tailing off and follow-up with a specific weekly dosage. While sudden withdrawal is credited by some workers with profuse diuresis due to induced adrenocortical deficiency, many cases showed response while on prednisone therapy. High dosage has been advocated by some workers, and some cases of failure have been attributed to a relatively small dosage. Relapse rate amongst those on intermittent maintenance therapy is lower than that amongst those without maintenance therapy (Rennie, 1956 ; Maxwell, 1958 ; Holland *et al*, 1958 ; Pechioli and Cheli, 1959).

The dosage of prednisone in this study varied from an average daily dosage of 4·7 mg. (242·5 mg, in 51 days) to 30·3 mg. (1030 mg. in 34 days). Amongst the 'excellent' cases, the daily average dosage was from 4·7 to 23·7 mg. ; amongst the 'good' cases from 8·9 to 22·4 mg. ; amongst the 'fair' cases from 18·6 to 30·3 mg. ; and amongst the 'poor' from 16·6 to 19·3 mg. The duration of therapy was from 14 to 35 days. When response was deemed poor in a fourteen-day period, the therapy was discontinued. Details of dosage and duration are shown in Table 1. Diuretic response and alleviation of proteinuria showed no relationship to the dosage of prednisone.

Discussion

Many cases of chronic nephritic oedema are resistant to treatment with salt-free high protein diet and diuretics. Prednisone has been used with success in a number of such cases. Not only does depletion of waterlogging occur but proteinuria improves, serum cholesterol level falls and blood protein rises with reversal of albumin-globulin ratio. In this study (with 19 cases), 10 cases were completely and 6 cases partially free from oedema ; 10 cases were free from proteinuria and 5 cases had protein (+) in urine. In all the cases blood cholesterol levels were lowered and blood

protein was elevated with change of albumin-globulin ratio in varying degrees. The children showed a better response.

The dosage and duration of prednisone therapy were individualised. The daily dosage was comparatively smaller than that tried by many other workers and the duration of treatment was for 14 to 35 days. Those cases which responded to treatment had their diuresis during the continuation of therapy. Treatment with higher dosage was not tried in the unresponsive cases nor were the latter subjected to intermittent therapy to study the effect of the size of the dosage or of intermittent therapeutic schedule.

The mode of action of prednisone is not known definitely. The effect is believed to be due to the reduced permeability of glomerular capillaries and to the depression of the output of aldosterone. But this hypothesis cannot explain the effect on serum cholesterol. It has been suggested that the drug acts on the fundamental disease process and probably interferes with the antigen-antibody reaction which is supposed to be the basic pathological biochemistry of nephrotic syndrome (Maxwell, 1958). It is due to such an effect on the fundamental disease process that the prognosis of nephrotic syndrome has greatly improved on prolonged prednisone therapy (Riley, 1956). It needs, however, to be established which type of cases responds to prednisone therapy and which does not.

Summary

Nineteen cases of chronic renal oedema were subjected to prednisone therapy, and the daily dosage and duration of treatment were individualised. In general the dosage was small, the individual daily dosage varying from 7·5 to 40 mg. The duration of treatment varied from 14 to 35 days.

Ten cases were completely and 6 cases partially free from oedema. Ten cases were free from proteinuria and 5 cases had protein one-plus in urine. Blood cholesterol level came down in all cases irrespective of response to oedema and proteinuria. All cases showed some elevation of blood protein with changes in albumin-globulin ratio.

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MANAGEMENT OF CHRONIC OCCLUSIVE DISEASES OF PERIPHERAL VESSELS

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This paper presents briefly the current philosophy of the peripheral vascular service of Mount Sinai Hospital with regard to the management of chronic occlusive disease in major peripheral vessels.

A critical study of the work of other groups as well as our own, has helped us in arriving at certain criteria which we follow in selecting candidates for arterial surgery. Although modified according to the individual patient, they help in establishing a standard for the surgical procedure of choice.

The diagnosis of chronic occlusion of vessels of the lower extremity can be made from a careful history, and with no more equipment than the palpating finger. The main history is that of intermittent claudication which may be located in the foot, calf, or buttock. The claudication may be progressive and result into rest pain which in most cases signifies a limb of doubtful viability.

Palpation of the femoral pulse at the groin, of the popliteal pulse behind the knee, and the anterior and posterior tibial pulses below the ankle will ordinarily indicate the site of occlusion.

Oscillometry can be of help where the palpability of the pulse is in some doubt. Skin thermometry, though it has been criticised in recent years

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as having no value, has been quite helpful in our hands in certain cases where sympathectomy has been advocated and employed.

The latest addition in a surgeon's armamentarium is arteriography. It should be employed in almost all cases, in spite of the fact that the procedure is not completely innocuous; because in properly trained hands, the usefulness far outweighs the hazards. The usual complications are vasospasm, extravasation of dye, sudden occlusion of the vessel resulting in gangrene of the foot. These occur in less than 1 per cent of cases.

In our experience, in cases where due to some reason or other an amputation was done without a pre-operative arteriography, an arteriography of the amputated limb at a later date demonstrated a functioning arterial system. If in these cases a pre-operative arteriography were performed the management might have been different, and possibly the amputation could have been avoided or delayed to a future date. A pre-operative arteriography is thus advocated in all patients who may need an amputation for one reason or another at a future date (Figs. 1A, 1B and 1C, *vide* Plate).

Of course, the same statement does not hold true in aortography. Consequently selection of cases for aortography should be made more carefully. There are certain cases where the site of occlusion is obvious, i.e., presence of the femoral pulse on one side with absence on the other side. This suggests an occlusion of the iliac artery of the corresponding side.

The technique of arteriography will not be discussed in this paper. Suffice it to say that most of them are done per cutaneous method.

Before deciding whether a patient should be offered reconstructive surgery, one must first determine whether surgery is technically feasible and advisable. Successful restoration of blood flow depends on new blood supply from a proximal site, and also upon the distribution of the new supply to the distal vessels. Successful replacement or by-pass of an occluded vessel will not improve circulation, however, if the patient's own terminal distributional system is not patent. It must be realised that the ultimate purpose of arterial surgery is to increase supply of blood to the individual cell rather than merely to circumvent an arteriosclerotic occlusion in a main artery.

The difference between the operable and the inoperable patient may, therefore, be clarified by defining the difference between segmental and non-segmental occlusion (Figs. 2 and 3, *vide* Plate.) In the segmental type of occlusion, the continuing vessels are patent and the blood supplied by the graft has a means of egress. In the non-segmental form, there is no distal point to which the graft may be attached, so grafting is not feasible. The length of occlusion is not particularly important, but the presence of adequate outflow is critical.

It is quite simple to surmise that the higher the occlusion the better the chances for a more adequate outflow, since more channels of egress are available. Therefore, although inadequate outflow is encountered in an appreciable number of femoral occlusions, it is rare to find an aortico-iliac occlusion that is not technically feasible. If the feet are viable in the presence of high occlusion, either the superficial femoral or deep femoral artery must be open to supply blood to the lower extremity. The size of the vessels are such that they almost invariably represent an adequate outflow.

The most difficult decision lies in the intermediate zone between obvious operability and obvious inoperability. In these instances, some patent vessels may be seen on the arteriogram below the occlusion, but the blood carrying capacity may be questionable (Fig. 4, *vide* Plate). In the presence of severe arterial insufficiency with rest pain and ulcer or gangrene, we elect to attempt a graft when the outflow is in doubt. This is based upon the thesis of having little to lose and a great deal to gain, since the graft is successful in some apparently inoperable cases. Of course, if the outflow is truly insufficient, the graft cannot and will not function. This is the main cause of our primary failure, where we put on grafts in so-called 'desperation attempts'.

The Ideal Patient for Surgical Correction

The symptomatology of occlusive diseases varies depending upon the degree of anatomical and vascular involvement. Occlusions circumvented by good collaterals with a comparatively mild interference with blood flow result in only intermittent claudication in the muscle group corresponding to the level of arterial occlusion. Intermittent claudication is the mildest symptom of the arterial insufficiency. It is important to differentiate between progressive and non-progressive intermittent claudication on the basis of history. Not all patients with claudication go on to increasing arterial involvement and increasing symptoms; and some patients with claudication maintain the same walking distance for years. Above all, in some there is symptomatic improvement in the course of time. However, history of evidence of progressive claudication with decreasing walking distance, and therefore decreasing blood supply, may well precede more serious problems.

Further involvement beyond the stage of simple claudication occurs if the arteriosclerotic occlusive process extends, or if a thrombosis *in situ* is superimposed upon a sclerotic stenosis. In this case, the symptom of rest pain, or the development of ulcer or even gangrene may supervene. Under these circumstances, arterial flow is very severely diminished, and restorative surgery is a surgical emergency. Unfortunately, in many of these cases, the outflow tract may no longer be open and a grafting cannot be done.

The role of endarterectomy in these cases of doubtful outflow tract should always be borne in mind. In our experience, when a patient shows a very doubtful outflow tract in a pre-operative arteriogram, one of the important things to consider at this time is imperfect exposure and timing at the time of the first arteriogram (Figs. 5A, 5B and 5C, *vide* Plate). In such cases, we always advocate a second arteriography on the operating table. A small incision is made at the site of the previously demonstrated occlusion, and an arteriogram is repeated under direct vision. This shows in many instances the presence of collaterals, and sometimes gives us an idea whether an endarterectomy can be tried in the anterior or posterior tribal vessels.

Endarterectomy is more useful when tried in larger vessels and when the vessel is patent proximal and distal to the occlusion. But its use in smaller calibre vessels in recent years shows much promise, and when there is a segmental occlusion of the anterior or posterior tibial artery, we always advocate and encourage an endarterectomy. This should be done very gently, otherwise, there is the possibility of rupture of the vessel wall resulting in serious complications. At present experimental work is in progress for finding out a mechanical anastomosing device suitable for anastomosis of small calibre vessels.

To summarise, we feel that the group with rest pain, ulcer, and gangrene should be operated on immediately ; the progressive claudicator should be operated on in the near future ; and the non-progressive claudicator may or may not be operated depending upon associated conditions.

The Patient in Whom Surgery is not Suitable

Patients not suitable for surgery may be subdivided into three large groups: (1) Those with diffuse involvement of the vessels, (2) those with associated prohibiting diseases, and (3) those with arterial involvement which is too minimal to require correction. The first sub-group needs no further clarification.

The second sub-group includes such associated diseases as congestive heart failure, malignancy, incapacitation due to previous stroke. Patients with angina pectoris should be very carefully evaluated, and unless definitely indicated should not have surgery. Past coronary occlusion is not considered a contraindication. Severe renal involvement and pulmonary emphysema also contraindicate the procedure.

The third sub-group includes those whose difficulties are too minimal to warrant correction. In recent years, long term follow-up of these cases has shown that about twenty-five per cent have spontaneous improvement and about fifty per cent remain stationary. Only twenty-five per cent become worse.

We encourage the non-progressive claudicator to walk, and advise some physiotherapy with the bicycle ergometer in the hope that collateral circulation will improve. We then do nothing until such time that progression may occur.

The place of sympathectomy in the field of peripheral vascular surgery is quite controversial. The popularity of the procedure has waxed and waned in the past years. Whatever may be the objections against sympathectomy, we consider this to be an useful procedure. We do not usually employ sympathectomy in the treatment of patients whose only symptom is claudication. We almost routinely advocate this for patients with rest pain or ulceration, and on whom no other procedure can be employed. We usually combine sympathectomy in arterial grafting and in endarterectomies where there is some doubt regarding the outflow tract.

There is no doubt that sympathectomy used in the properly selected cases makes the prognosis of reconstructive surgery in the lower extremity much more favourable.

In conclusion, we would like to point out that in properly selected cases, the possibility of saving a limb is quite high, and no stone should be left unturned in attempting to do so. "He is a good surgeon who can amputate a limb, but he is a better surgeon who can save a limb".

Short Notes on Cases

Case 1—White male, aged 56, had gangrene of 4th and 5th toes and evidence of infection. The patient had supracondylar amputation. A post-operative arteriogram of the amputed limb revealed that a preoperative arteriography might have helped this patient in avoiding an untimely operation. Fig. 1A (*vide* Plate) shows presence of functioning arterial system. Fig. 1B (*vide* Plate) shows well formed arterial arcade and even the presence of digital vessels of the great toe.

Fig. 3—Arteriogram showing diffuse arteriosclerotic involvement of artery which is not amenable to any reconstructive arterial surgery

Fig. 4—Arteriogram showing a block with doubtful outflow tract

Fig. 5A—Arteriogram showing absence of dye below the superior tibiofibular joint

Fig. 5B—Arteriogram showing presence of functioning arterial system in leg.

Fig. 5 C—Arteriogram showing a patent and functioning femoral arterial system above the knee

DAS GUPTA AND GRADMAN—*Management of Chronic Occlusive Diseases of Peripheral Vessels (p. 448)*

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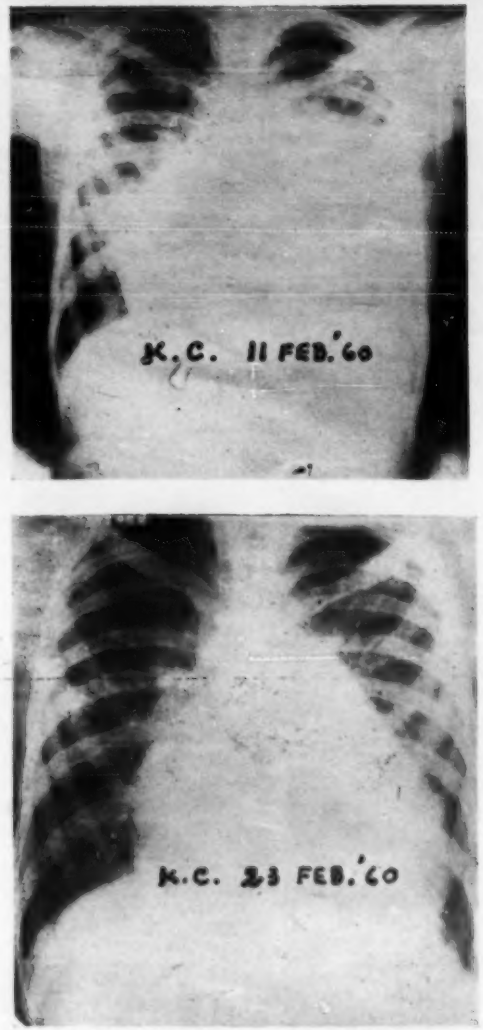

Fig. 1 A and B— (X-ray of the chest) showing definite decrease in the size of the heart after treatment with prednisone for 12 days

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Case 2—White female, aged 67, had an arteriosclerotic ulcer of the right leg which was refractory to all kinds of therapy. Pre-operative arteriogram failed to show any dye below the knee. A supracondylar amputation was done. Fig. 1C (*vide* Plate) shows that the blood vessels in the amputated limb stop at the level of the neck of the fibula. Air bubble was injected to demonstrate patency of the arteries. This is an example of justifiable supracondylar amputation.

Case 3—White male, aged 55, had intermittent claudication after walking less than half a mile. Arteriogram revealed a classical segmental block (Fig. 2, *vide* Plate). A femoral bypass using crimped teflon graft was done. Improvement was dramatic and two years after surgery the patient walked one mile and a half, and was back to work.

Case 4—This is an illustration of diffuse arteriosclerotic involvement of artery (Fig. 3, *vide* Plate) which is not amenable to any reconstructive arterial surgery.

Case 5—White male, aged 70, complained of severe rest pain of about 6 months' duration. Arteriogram revealed a block with doubtful outflow tract (Fig. 4, *vide* Plate). A femoral bypass was done using 20" crimped dacron. The distal anastomosis was below the knee. The result was quite encouraging. Rest pain disappeared and the patient was symptomless one year after surgery.

Case 6—Negro female, aged 55, had an ulcer of the dorsum which was not amenable to any conservative treatment. Arteriogram showed no dye below the superior tibiofibular joint (Fig. 5A, *vide* Plate).

Case 7—This patient had a sympathectomy and the ulcer healed within 10 days after surgery. She remained asymptomatic since 2 years after surgery. Arteriogram on the operating table revealed presence of functioning arterial system in the leg (Fig 5B, *vide* Plate).

Case 8—This is an illustration of a patent and functioning femoral arterial system above the knee (Fig. 5C, *vide* Plate).

PRACTITIONERS' SERIES

THE MANAGEMENT OF RHEUMATIC FEVER

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The management of a rheumatic fever patient may be considered under the following headings:

1. Eradication of streptococci, 2. Specific antirheumatic therapy, 3. General management, 4. Prevention of recurrent attacks of rheumatic fever.

Eradication of Streptococci

It is generally accepted that a large number of rheumatic fever patients harbours β haemolyticus streptococci in the throat and upper respiratory tract and positive throat cultures are obtained with greater frequency if 6 throat and nasal swabs are taken on three successive mornings. To eradicate the source of infection 1·2 million units (800,000 units in smaller children) of penicillin should be administered intramuscularly daily for 10 consecutive days. Thereafter the patient should receive 200,000 units of oral penicillin tablets twice daily or sulphadiazine 0·5 g. 2 to 3 times a day.

Specific Antirheumatic Therapy

Before discussing the relative merits and demerits of any specific antirheumatic therapy an attempt should be made to answer the following 3 sets of questions:

1. What is the normal clinical course of rheumatic fever if recurrent attacks can be avoided?
2. How frequently and when do significant murmurs (indicating carditis) appear?
3. Is there any evidence that adrenocorticosteroids have better anti-inflammatory effect than aspirin?

Analysis of our own data at the House of Good Samaritan have enabled us to comment on these problems, and the experience at Delhi tends to confirm these observations.

1. Rheumatic fever, if β haemolyticus streptococci are successfully eradicated, runs a self-limited course and subsides in most instances within 12 weeks (over 80 per cent in a series of 269 initial attacks of rheumatic fever).

2. In our series both at Boston and Delhi about half of the patients develop carditis. In the Boston series of 261 cases with carditis where observations were reliable, significant murmurs appeared in 3 out of 4 cases within 10 days and 4 out of 5 cases within 21 days. No comparable data are available in Delhi.

3. Evidence that adrenocorticosteroids are more effective than aspirin in their anti-inflammatory properties may be deduced from the following:

(i) In other collagen diseases (like lupus, rheumatoid arthritis, scleroderma) adrenocorticosteroids definitely suppress the acute phase much more effectively.

(ii) Subcutaneous nodules disappear much more rapidly when treated with adrenocorticosteroid than aspirin. Similarly, sedimentation rate, C-

reactive protein and prolongation of P-R interval electrocardiographically also approach normal more rapidly with hormone treatment.

(iii) The use of adrenocorticosteroids in severe cases of rheumatic pancarditis with congestive failure, whose course used to be fatal prior to hormone therapy, has resulted in a brighter outlook on the prognosis of these cases.

The following case report illustrates the point.

K. C., Hindu male, aged 15, was admitted to the Institute Hospital on 10-2-60 with history of fever, chest pain and acute dyspnoea of 4-5 days' duration. On examination he looked toxic, oral temperature was 102·6°F., pulse 120/minute, blood pressure 150/50 mm. Hg; neck veins engorged 5 cm. at 45°; liver tender, enlarged 4 cm. below right costal margin; no ankle oedema; basal pulmonary crepitations present; heart grossly enlarged (Fig. 1A, *vide* Plate). On auscultation extensive precordial friction rub loud enough almost to mask murmurs of loud apical blowing pansystolic with mid-diastolic rumble and aortic diastolic blowing decrescendo were heard. Laboratory investigation revealed C-reactive protein of 4; E.S.R. 45 mm. 1st/hr., and ASL "O" titre of 333 units. It was felt that this patient had acute active rheumatic pancarditis and was started on prednisone therapy. Precordial friction rub and fever disappeared within 72 hours, heart size decreased significantly in 10 days (Fig. 1B, *vide* Plate) and CRP became negative and ESR normal within 26 days. Subsequent follow-up was gratifying, the heart being only slightly enlarged with no evidence of heart failure or activity.

Toxic side effects—Both salicylates and adrenocorticosteroids in large doses may cause certain unwarranted toxic effects. Salicylates may cause nausea, vomiting, epigastric discomfort, hypoprothrombinaemia, hyperpnoea and alkali reserve depletion. All these toxic effects can be controlled by omitting salicylates for 24-48 hours, and restarting with a smaller dose. Adrenocorticosteroids, on the other hand, besides producing Cushingoid features (cosmetically objectionable) have the potential danger of secondary infection especially viral and also mental depression particularly in the adults. For controlling secondary infection all patients receiving hormones should be covered with antibiotics, and the physician must be on the look out for infection and keep careful watch on the mental status of the patient.

Choice of therapy—Whenever a rheumatic fever child is seen with pancarditis and congestive failure denoting severe carditis the drug of choice is adrenocorticosteroids, preferably orally, but if necessary should be administered intramuscularly or even intravenously. On the other hand, if a patient is seen three weeks after the onset of the disease without any heart involvement the risk of this patient developing heart damage is extremely small and should preferably be treated with aspirin. But when a patient is seen within the first 2-3 days of the attack and the chance of heart involvement is about 50 per cent what should the practising physician do? Is he to wait and see if the child develops or escapes heart damage or is he to start on more effective anti-inflammatory therapy and protect against possible heart damage? This is a difficult question to answer and every case should be evaluated individually taking into consideration the socio-economical background, hospital facilities and other merits and demerits of the selected therapy.

Dosage schedule—Whatever therapy is selected it should be given in adequate dose for the entire course of expected activity which is about 12 weeks. Aspirin should be given in 4 divided doses calculated at 40 mg. per pound body weight in 24 hours, the maximum total dose not to exceed 6 g. in a day for ten weeks, to be tapered off in the last two weeks. If prednisone is to be administered then it should be followed according to Table 1 which is being practised here and also at Boston. When the hormone is given additional potassium salts, 3 g. a day, should be administered and patients should preferably be on a low salt diet.

TABLE 1—SHOWING DOSAGE SCHEDULE OF PREDNISONE (FOR 12 WEEKS)

Period of therapy (days)	Total daily dose (mg.)	Cumulative dose (mg.)
21	60	1260
7	50	1610
7	45	1925
7	40	2205
7	35	2450
7	30	2660
7	25	2835
5	20	2935
5	15	3010
5	10	3060
6	5	3090

For patients weighing less than 40 lb., two-thirds of the above dose schedule should be employed.

GENERAL MANAGEMENT

Attending physicians as well as patients very often wish to know about the advisability of transferring a patient to the hospital and also how long

he should be kept in bed and when he should go back to school. An attempt is being made here to answer these questions.

Hospital versus home management—Rheumatic fever is commoner in the lower socio-economical group and in India I do not think the question of home management will arise very often if hospitals can accommodate these patients. Unfortunately there are very few hospitals in India which can routinely keep these patients for 12-14 weeks as other pressing medical problems have also to be catered to. However, my only plea for those patients who deserve hormone therapy is that they should be hospitalised for 12-14 weeks if possible or at least for a reasonable period until the daily hormone dose is reduced to less than half of the original dose (i.e. for about 6-7 weeks).

Bed rest and return to school—There is a tendency among certain physicians to cripple the activities of the child with rheumatic fever for the rest of his life just because he has an apical systolic murmur. I have seen children being kept in bed for 2-3 years and brought to the clinic carried by the doting parents. While bed rest and limitation of activity are necessary as long as there is clinical or laboratory evidence of active rheumatic process, once these signs disappear, the children should be rapidly convalesced. If there is no heart involvement I generally send these patients back to school within 16 weeks, and if there is cardiac damage, return to school is delayed for six months. I always encourage those patients to lead as normal a life as possible, and encourage full participation in routine non-competitive games. Also, the rather unfortunate term 'potential rheumatic heart disease' should be deleted from the rheumatic world as this causes confusion in the diagnosis and unnecessary worries to the patients.

Prevention of Recurrent Attacks of Rheumatic Fever

After the eradication of β haemolyticus streptococci, the patient should be kept on prophylactic therapy with either sulphadiazine 0·5 g. two to three times a day or penicillin given orally as tablets of 200 units morning and evening or injection of long-acting penicillin 1·2 mega units fortnightly. Recurrence of rheumatic fever is rare after the age of eighteen years, hence rheumatic fever patients should be given prophylactic therapy up to this age. If continuous prophylaxis is not practical, then any upper respiratory infection should be promptly and adequately treated. The disadvantage of the latter method becomes apparent when one realises that the history of antecedent sore throat or upper respiratory infection was obtained in less than 50 per cent of the rheumatic fever patients with high antistreptolysin 'O' titres.

Summary of Therapy

1. Rheumatic fever patients should be promptly treated with 1·2 million units of penicillin for 10 days to eradicate β haemolyticus streptococci and then to continue either penicillin or sulphadiazine prophylactically up to the age of 18 years.

2. Rheumatic patients with carditis should preferably be treated with corticosteroids, and others with aspirin for about 12 weeks, with adequate dose and the physician must be on the look out for side effects.

3. Patients receiving hormones definitely, and others preferably, should be hospitalised at least as long as signs of activity persist. Regarding duration of bed rest, convalescence, return to school and full activity, every case should be evaluated individually but forced bed rest and unwarranted cardiac crippling should be discouraged.

SPECIAL ARTICLE

NECESSITY FOR INSTITUTION OF POSTGRADUATE COURSE IN MEDICAL MYCOLOGY

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Scant attention is paid in our medical colleges to the teaching of human mycoses. As a consequence, our graduates who go out to the countryside to practise or those who take up positions in our teaching institutions or general hospitals, are hardly equipped to deal even casually with patients suffering from mycotic diseases or problems thereof that confront them.

Much information has accumulated and techniques perfected during the past decade or two due to painstaking research by many investigators. As a result, mycotic diseases no longer form a part of clinical medicine or comprise a little-known branch of bacteriology. They now form a definite branch of medical science called medical mycology.

Fungi causing both superficial and systemic mycoses have a separate saprophytic existence in nature and are only fortuitous invaders of man and animals (Emmons, 1954). This fact emphasises the study of fungi both in their parasitic and

saprophytic stages. As a consequence the study of fungous diseases of man has become linked up with the fundamental tenets of that branch of specialised botanical science known as mycology which studies fungi in all their broad aspects. This logically leads to the necessity of close association of trained mycologists with medical men if the desired results are to be obtained both with regard to teaching of and research in medical mycology.

It is, however, heartening to find that our medical administrators, scientists and the thoughtful section of the medical profession are getting increasingly aware of the existence of such lacunae in our medical curriculum. They are no less aware of the absence of training facilities for those who wish to specialise in medical mycology.

It was to arouse interest amongst the specialists, the profession and the public that a symposium on Indian fungous diseases (1959) was held in Calcutta. But the problem is so vast that one symptom could hardly cover every aspect of mycotic infection of man. Teaching of, and training in, medical mycology was one that escaped attention in the symposium.

In recent years mycotic infection all over the world has assumed a greater significance with the universal use of broad-spectrum antibiotics. Because of the control of bacterial infections through administration of antibiotics, the intercurrent fungous infection, which hitherto remained suppressed or insignificant, has assumed severity due to the elimination of competition with bacteria. Furthermore, fungous infections are at the root of many ill-defined symptoms. As such one should consider mycotic disease in the differential diagnosis of practically every obscure infection (Conant *et al*, 1954).

Evidence is gradually accumulating to show that systemic mycotic infections, no less than the superficial ones, are probably more widespread in this country than in most others. Such infections have been here, but hitherto there were no means to diagnose them because of lack of trained personnel in the country and also because diagnostic techniques were not so much improved as they are at present.

The question naturally arises as to how best can we train our medical graduates, would-be teachers and technicians in recent developments in the field of human mycoses including diagnostic methods. The first difficulty that is encountered while dealing with a case of mycotic infection is the specific identification of the fungus responsible for a particular clinical picture.

The problem of identifying a pathogen can be gauged when it is noted that any one of the 12 valid (under International Rules of Botanical Nomenclature) species of fungi belonging to more than one genus may cause *Tinea capitis*, that any one of the 11 species of fungi may cause *Tinea corporis*, any one of the 7 species of fungi may cause *Tinea unguium*, any one of the 5 species of fungi can cause *Tinea pedis*, while any one of the 4 species of fungi can cause *Tinea cruris* and so on and so forth (1958). The situation is no less complicated in the case of deep-seated mycosis. The multiplicity of species, any one of which may be involved in a single clinical picture, causes in the words of a team of outstanding authors (Conant *et al*, 1954): "Most technicians and many physicians too become confused and discouraged in their attempts to study the fungi because of the variation in gross colonies, the multiplicity of microscopic structures and unfamiliar nomenclature". Specific identification of the aetiological agent is, however, essential because different species usually require different prophylactic and curative measures. The same fungicide or fungistatic substance cannot equally affect all the different species of fungi that may produce an identical clinical symptom.

Such being the magnitude of the problem, very little technical knowledge exists amongst clinicians to enable them to determine which one of the several species of fungi, that can produce clinically similar mycotic affections, is involved in a particular case. The existing state of affairs in this country in this regard has been ably surveyed in a recent editorial (*J. Indian M.A.*, 1959) which states that descriptions of fungi, and fungous diseases in Indian literature "usually are copies from edition to edition" (of foreign publication) "without an eye to what actually happens with the change in environment." Again, to quote Pandit (1959) "A few and scattered case reports of sporotrichosis, blastomycosis, cryptococcosis, etc., are to be found in the Indian literature but in none of these cases, the clinical diagnosis has been authenticated by any laboratory investigations." It is, therefore, essential that much laboratory work must precede specific identification of a pathogenic fungus. The technique of isolation of a pathogen and its establishment into pure culture has to be mastered. Microtechnique regarding measurement of the morphological structures such as hyphae, asexual and sexual spores and other reproductive structures has to be learnt to enable one to identity the particular species of the fungus that is involved in a particular infection. Trying to pin down the fungus to its specific identity by the clinical features alone leads very often to wrong identification.

It is, therefore, essential that early steps should be taken to organise courses in diagnostic medical

mycological methods in a few centres of medical learning where facilities can be easily arranged for. No doubt, several institutions in the country offer postgraduate courses in dermatology, but these courses are invariably burdened with topics selected from different aspects of dermatology, of which the part dealing with the fungous diseases has of necessity to be limited. Furthermore, little attention is given to the basic aspects of the study of the fungus, its morphological characters and structural features, its methods of reproduction, mode of infection and spread, the micro- and macro-environmental factors that check or favour its growth, reproduction, and spread in the host tissue. Teachers conducting postgraduate diploma courses in dermatology may often be outstanding specialists in their own branch of the medical science but they are not able at the same time to do equal justice to the teaching of the basic mycological aspects of fungous diseases.

Apart from a knowledge of the diagnostic features, cultural behaviour, and life-history both *in vivo* and *vitro*, the clinicians and technicians should possess sufficient knowledge in fundamental mycology to recognise the common contaminants usually associated with materials taken from human lesions ; otherwise, aetiologic significance may erroneously be ascribed to such a contaminant. The situation is often made more difficult by the fact that a contaminant is so regularly associated with a patient's lesion that it is likely to be taken as the aetiologic agent of the disease (Conant *et al*, 1954).

The present unhappy state of affairs in the country cannot be improved unless properly trained personnel are available to man our hospital laboratories. Institution of postgraduate courses in diagnostic medical mycology should, therefore, have precedence over all other measures directed to improve our knowledge about the prevalence and facilities for better treatment of mycotic diseases in our hospitals in particular and over the countryside.

While it is not possible to enumerate here all the details of a syllabus in medical mycology, the broad outline of such a scheme of teaching should be as follows :

1. The trainees should be graduates in medicine with at least one year's experience as houseman or demonstrator in dermatology of a recognised medical college or allied medical institution, or must have completed two years of continuous medical practice.

2. The course will be for a duration of one year of full-time training, both theoretical and practical (9 months' training and 3 months' internship).

3. The trainees should be given fundamental instructions on the different groups of fungi, their morphological characters, cultural features, nutritional requirements and physiological behaviour, mode of infection and spread in the host tissue.

4. The trainees should be taught the technique of micrometry, single-spore culture, microtome preparation, staining procedures, etc.

5. After a grounding has been made in general mycology, the trainees should be taught in a more detailed fashion the life-history, cultural characteristics and physiological behaviour of the different species of pathogenic fungi causing superficial and deep-seated mycoses.

6. To enable the trainees to distinguish the common contaminants which often occur in association with the pathogenic fungi, instructions should also be given regarding the common contaminants and on how to distinguish the contaminant from the incitant.

7. The course will comprise of both theoretical lectures and practical studies of all the important pathogenic species of fungi and the diseases they produce.

8. The trainees will have to attend the outpatients clinic in the hospital, and follow up important cases in the laboratory.

9. The principal teacher should be a trained and experienced mycologist. He should be assisted by a junior teacher who will be a medical graduate with postgraduate training and/or experience in dermatology or medical mycology.

Such courses conducted by experienced mycologists in association with medical graduates trained in general dermatology will impart to the trainees a balanced emphasis on both the pathogen and the disease.

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THE TRANQUILLISERS

As the nineteenth century was marked by the perfection of the art of physical examination and diagnosis, and was sometimes labelled as the age of 'therapeutic nihilism', the advent of the twentieth century established the age of therapeutic rationalism. We saw in successive stages discovery of arsenobenzol for the treatment of syphilis ; insulin for diabetes ; sulphonamides and antibiotics for bacterial infection and recently the tranquillising drugs for which there is a widespread craze, particularly in the western countries. The last is largely replacing the sedatives of the bromide and barbitone groups of drugs. The only distinguishing feature of the tranquillising drugs in contrast to conventional sedatives is the fact that these drugs calm without producing sleep and that their site of action in the central nervous system is predominantly subcortical.

The term 'tranquillisers' has therefore been given to a group of newly discovered drugs with the property of sedating without impairing consciousness. So widespread has been their use that their sale ranks only second to that of antibiotics in the world market. Their principal sites of action are important regulating centres of the brain, such as the thalamus, hypothalamus, reticular activating system and portions of the limbic system[1].

Phenothiazine derivatives are now being used practically in almost every branch of medical practice as, besides being the most effective tranquilliser for treating severe emotional disorders, they are also clinically useful for potentiating other analgesic or anaesthetic drugs and also for controlling vomiting and hiccough. No doubt their introduction into the therapeutic armamentarium has been heralded as a milestone in psychiatric medicine and has truly revolutionised the treatment programme in mental hospitals.

Naturally there is a great demand for these drugs in these days of stress and strain, and emotional instability ; and to meet such demands their number is increasing in the market at a phenomenal rate. To make matters more confusing, the same compound appears under a number of different trade names.

Under the circumstances, it is necessary to make an attempt to classify these agents on the basis of clinical indications or the predominant pharmacological actions which may help clearing the confusion created by the multiplicity of their numbers.

There are views against such basis of classification[1] which contend that clinical indications may change with the passage of time and many of these drugs have a variety of pharmacologic actions, the relative importance of which is still not settled. The best way to classify these drugs seems to be on the basis of their chemical structure[2]. According to them tranquillising drugs may be classified into four groups according to chemical structure. These are (a) phenothiazine derivatives, (b) rauwolfia alkaloids, (c) substituted propanediols or butanediols, and (d) diphenylmethane derivatives.

Others again are of the opinion that since the principal use of the tranquillising drugs is for psychoneurotic disorders, they belong to one of the two main divisions of the psychopharmacological drugs that have come to prominence since about 1955, viz., hallucinogenics or phantasmagorics and tranquillisers or ataraxics ('ataraxy' meaning freedom from confusion and anxiety) that constitute the second group of psychopharmacological agents. There is a large number of such drugs and Ferguson[3] thinks that only six of them should suffice to control, ameliorate or resolve most abnormal behaviour manifestations. These are (1) reserpine, (2) chlorpromazine, (3) deoxylamine succinate closely allied to decapryn, (4) ectyluria or nostyn, (5) methylphenidyl acetate (ritalin), and (6) azocyclonol or frenquel. According to him reserpine and chlorpromazine may be termed psychosedatives, while ectylurea (nostyn) and deoxylamine succinate are neurosedatives.

No doubt there is useful scope for both these groups in psychiatric practice, as the behaviour of mental patients is often the result of a combination of over and under-activity, i.e., of a mixed nature. From this point of view one can understand the need for such drugs as ritalin and others which are, truly speaking, cerebral stimulants. These two groups, viz., psychosedatives or true tranquillisers and cerebral stimulants are complementary. Ferguson[3] says that ritalin may correct depression induced by reserpine ; and that frenquel,

[1] HOLLISTER, L. E.—*California Med.*, **89** : 1, 1958.

[2] ALEXANDER, L.—*J.A.M.A.*, **166** : 1019, 1958.

[3] FERGUSON, J. T.—*Ibid*, **165** : 1677, 1957.

which is an anti-hallucinogen, may be used in combination either with reserpine or with ritalin. The latter is said to balance psycho- and neuro-sedative effects and therefore is an active tranquilliser.

Such classification may be well and good if psychiatry be the only field of application of the tranquillising drugs. But it is not. We have remarked above that these drugs are being used in almost every branch of medical practice, and so a different and comprehensive classification is called for besides that based on psychiatric practice alone.

Other authorities think that most tranquillising drugs fall into one of four general groups, according to their chemical structure as mentioned above[2]. For the most part, drugs within each group have similar pharmacological actions, clinical indications and disadvantages.

Phenothiazine derivatives are the most widely used and of the greatest interest from the research point of view. There is quite a number of them sold under different trade names. A few of them are chlorpromazine (thorazine), promazine (sparine), triflupromazine (vesprin), mepazine (pacatal), prochlorperazine (compazine), perphenazine (trilafon), thiopropazote (dartal). But not all of them are available in the Indian market.

It is important to know that an amazing diversity of pharmacologic actions is exhibited by the phenothiazine derivatives. Chlorpromazine stimulates the amygdaloid complex. Such stimulation might interfere with the function of the limbic system, as well as depress the hypothalamus. It also depresses the function of the reticular activating system which regulates the intensity with which stimuli are appreciated and the emotional reactions evoked[4]. Its tranquillising effect can be explained by its action on these three areas. Much of the emotional response to external or internal stimuli would be diminished by such actions.

Chlorpromazine was originally developed to potentiate analgesic and anaesthetic agents. For this effect it has been used clinically in surgical anaesthesia and treating painful states like metastatic malignant disease[5]. Besides, the antiemetic property of considerable degree has made some phenothiazine derivatives the drugs of choice in counteracting nausea and vomiting[6, 7]. It acts by depressing the medullary chemoreceptor trigger zone for vomiting, and perhaps a similar action may account for its effect on hiccough. Apart from all these a considerable amount of experimental work has been done to determine other effects of phenothiazine derivatives, and these range from adrenergic blockage to the production of hypothermia, and metabolic effects to the production of an interesting variety of extrapyramidal syndromes.

Chlorpromazine, the first of the group, has been the most intensively studied drug in treating virtually every psychiatric syndrome. Its effect particularly on schizophrenic reactions has been very encouraging, so much so that it is now the standard against which all succeeding psychotherapeutic drugs must be measured. It may be that some other drugs of this group may also have similar, if not better, effects.

But while its beneficial actions cannot be denied, chlorpromazine may cause two serious complications, viz., jaundice and agranulocytosis[8]. Although rare, they are nevertheless serious complications. Agranulocytosis is more common after administration of phenothiazine compounds, viz., pecazine (pacatal). In this respect piperazine, perhaps, is less harmful.

Adrenergic blocking effects, which have led to severe hypotensive crises in some patients treated with chlorpromazine, appear to be less with the newer drugs. On the other hand, the piperazine derivatives produce more severe extrapyramidal signs. States of uncontrolled motor activity, oculogyric crises and spasms of the neck, tongue and pharyngeal muscles, in addition to the common triad of muscle rigidity, resting tremor and loss of associated movements are frequently encountered. The question whether or not the increased frequency of extrapyramidal effects is correlated with increased amelioration of schizophrenic symptoms is debatable[1].

Rauwolfia, on the other hand, was introduced from India primarily for its effect on hypertension. Its value as a tranquilliser was observed only incidentally[9].

There are a large number of alkaloids (presently about three dozen have been isolated) in the plant, but only three are currently being used clinically. The chemical differences between these alkaloids are slight as are their pharmacological actions, and they differ very little from the effects produced by the whole-root extracts.

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[4] Himwich, H. E.—*Science*, **127** : 59, 1958.

[5] Sadove, M. S., *et al.*—*J.A.M.A.*, **155** : 626, 1954.

[6] Friend, D. G., *et al.*—*AMA, Arch. Int. Med.*, **99** : 732, 1957.

[7] Moyer, J. H.—*Med. Clin. N.A.*, **41** : 405, 1957.

[8] Hollister, L. E.—*New England J. Med.*, **257** : 170, 1957.

[9] Wilkins, R. W., *et al.*—*Ibid*, **248** : 48, 1953.

The sites of action, like those of chlorpromazine are chiefly subcortical[10, 11, 12]. Its action differs from the above by the fact that it stimulates the reticular activating system rather than depressing it, and hence its sedative action is not as powerful as that of chlorpromazine. On the other hand, its action on the amygdaloid complex is exactly similar to that of chlorpromazine.

The two pharmacologic actions, viz., tranquillising and antihypertensive, have been the main indications for the clinical use of rauwolfia alkaloids. As with chlorpromazine, virtually every kind of psychiatric disorder, except mental depression, has been treated successfully with rauwolfia, and in this the whole-root extracts seem to give better results. Santina is the example. But for some unknown reasons rauwolfia alkaloids aggravate existing cases of depression and may in fact produce it in patients not previously depressed[13]. Its effect on psychiatric cases is second only to chlorpromazine ; and the noxious minor side reactions, such as stuffy nose, lethargy and muscle aching, have made other tranquillisers preferable for treating emotional disorders of the milder types. Apart from these, rauwolfia produces very few major complications. But mental depression is still potentially the most serious because of the risk of suicide. Curiously enough, this symptom seems to occur somewhat oftener in persons treated for hypertension than in psychotic patients[1].

Large doses of reserpine used in psychiatric practice (more than 2 mg. daily) have been known to activate duodenal ulcer, sometimes even with haemorrhage[14], although it is less so when hypertension is treated with this alkaloid. It is, however, necessary to give careful attention to ulcer cases when rauwolfia is used.

There are many preparations of rauwolfia depending on the alkaloid used, from the whole-root extracts (raudixin) and alseroxylon fraction (rauwiloid) to reserpine (serpasil, reserpoid, serpiloids), etc.

The fact that reserpine releases serotonine, a neurohumoral agent from the brain and that chlorpromazine has a potent anticholinesterase activity suggests that these drugs might act by neurohumoral mechanism[15]. They also affect the synaptic transmission in the brain, which, it has been postulated, may be disturbed in case of mental disorders.

There is another possible factor that chlorpromazine and reserpine, through their action on the autonomic nervous system, depress the normal alarm reaction and thus diminish the response[16].

However beneficial these drugs may be there is no doubt that chlorpromazine and reserpine produce profound changes in personality[17], suggesting that a patient, though benefited while under treatment with one of these potent drugs, cannot be considered equivalent to a perfectly normal human being. The same conclusion is reached if we remember the general inhibitory effects produced on cerebral metabolism by these substances. It is inconceivable that inhibition should be entirely restricted to the unwanted cerebral activities only[18].

The next group of the tranquillising drugs are the substituted propanediols or butanediols which were developed originally to improve on the skeletal muscle relaxant properties of mephenesin. The best known one, meprobamate (miltown, equanil), which has been most extensively used and studied, is the dicarbamate form of a di-substituted propanediol. These drugs are mild sedatives and hypnotics and their place in the treatment of schizophrenic conditions is very low indeed. Even their hypnotic action is perhaps lower than that of the barbiturates, and yet these drugs have caught the imagination of a very large number of doctors as can be judged by he prolific issue of prescriptions. This may be, because of the widespread advertisements indirectly reaching even to laymen.

As with other tranquillising drugs, its sedative effect seems to outweigh the hypnotic. This fact as well as a subcortical site of action in the thalamus and internuncial neurones of the spinal cord, permits meprobamate and its class to be grouped as tranquillising drugs[19].

Meprobamate has been used chiefly for treating temporary anxiety in 'normal persons' as well as more severe and chronic anxiety in psychoneurotic individuals.

Allergic reactions even with the very first dose of meprobamate are the most frequent complications[1]. Even withdrawal reactions following abrupt discontinuation of the drug have been described by a number of observers[1]. The wide acceptance of

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[10] BEIN, H. J.—*Pharm. Rev.*, **8** : 435, 1956.

[11] MINER, R. W.—*Ann. N. Y. Acad. Sci.*, **59** : 1, 1954.

[12] *Idem—Ibid*, **61** : 1, 1955.

[13] EDITORIAL—*Lancet*, **2** : 330, 1955.

[14] HOLLISTER, L. E.—*AMA, Arch. Int. Med.*, **99** : 218, 1957.

[15] PLETSCHER, A., *et al.—J. Pharmacol.*, **116** : 84, 1956.

[16] MAHFOUZ, M., *et al.—J. Pharmacol. and Exper. Therap.*, **123** : 39, 1958.

[17] VOGT, M.—*Brit. M. J.*, **2** : 964, 1958.

[18] SARGANT, W.—*Ibid*, **2** : 1095, 1955.

[19] HENDLEY, C. D., *et al—Proc. Soc. Exper. Biol. Med.*, **87** : 608, 1954.

this drug, both by patients and physicians, has been astounding[1], and a word of caution may, therefore, be sounded that as with barbiturates the use of large quantities of this drug along with alcohol may be expected to produce fatal synergistic effects[1].

The last group is the diphenylmethane derivatives. The best known example is hydroxyzine which is both sedative and potent antihistaminic. This has been used in milder emotional disorders and for the treatment of skin disorders. Another drug of this group is benactyzine which is also anticholinergic and is said to be useful in treating psychoneurosis, especially the specific symptoms of phobia and compulsion[20]. Some of these drugs may have a future but currently their application does not stand on any merit.

The rate of progress in the development of the tranquillising drugs is unsurpassed in the history of modern medicine. This testifies to the need for such a drug in this 'age of anxiety'. The modern tempo of life, the hard struggle for existence, and the race for grab and gain put the greatest strain on the mental equilibrium of the present generation of mankind, so unlike those of our forefathers. Apart from their use in mentally ill patients, tranquillisers are very largely indulged in by many normal persons just for the need of comfort—an easy and prompt means of escape from the unpleasant task of facing the hard facts of life. It is interesting to note in this context that as far back as in 1857 the *Lancet* felt it proper to express its editorial disapproval of the use of drugs as a prop on which to face life, in these words: "that man's nervous system must be in a very disordered state who resorts to a pipe or cigar in order to tranquillise himself and induce an aptitude for the business of the commencing day." Those are days when modern tranquillising drugs could not even be thought of. No doubt life has become much more complex since then, and the manufacturers find in the tranquilliser a very great source of gain, and its development a highly profitable venture. Hence the multiplicity of the drug with attractive advertisements.

However useful these drugs may be, they have evil effects, and even the most complacent observer must admit that these drugs have been abused. Much depends on the physicians and they should, no doubt, do everything for the good of the patient, but not what is most expedient. The tranquillising drugs should be used when anxiety becomes disabling and even then as only a temporary measure while the cause of the anxiety has to be sought and removed. To a certain extent and when it is not disabling, anxiety is good in solving some problems of life and is far better than a temporary though pleasant relief. This, of course, does not apply to true psychoneurotic patients.

The W.H.O. Committee on Addiction of Drugs expressed in 1957 its concern at the increase in the abuse of tranquillising drugs[21]. Apart from allergic reactions, irreparable damage is said to be caused to the emotional and moral background of essentially normal human beings[22]. Serious emotional problems, suicidal depressions, parkinsonism have all been precipitated by the free use of tranquillisers in essentially normal psyches. 'The hazards of tranquillity' was the caption of an editorial comment on the danger of tranquillising drugs by the *British Medical Journal* in recent years[23]. Similar warning was sounded by the *American Journal of Psychiatry*. The editorial condemned the widespread use of these drugs in the following words: "There is a real danger of seducing patients into a bogus health and of weakening their adaptive capacities"[24] "The excessive use of tranquillising drugs against anxiety is a threat to American society," said Dickel and Dixon[25]. They fear that these drugs may smother the incentive to change and progress that derives from fear and anxiety. Sargant compares it to alcohol and tobacco[19].

Besides it cannot be said to be a sure cure for a mentally ill patient and far less to a normal one, just as no drug has ever been. "In your ideas of the powers of remedies do not be too sanguine, for you are liable to continued disappointment" said Sir Anthony Carlisle in 1824 and it is as good now as it was then.

These drugs undoubtedly are very good sources of profitable income both for the physicians and the manufacturers. But past are those days when Dr. Faustus said:

"Be a physician, Faustus, heap up gold,
And be eternis'd for some wondrous cure."

Instead the opportunities for heaping up gold now lies with the commercial drug houses. Whatever they may say there is no ideal tranquilliser and it is doubtful if it will ever be. But at the same time the removal of fear, guilt, and anxiety under all circumstances would render man less than human[26].

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[20] DAVIES, E. B.—*Brit. M. J.*, **1**: 480, 1956.

[21] ANNOTATION—*Lancet*, **1**: 778, 1957.

[22] W.H.O. Committee on Addiction of Drugs., 1957.

[23] EDITORIAL—*Brit. M. J.*, **2**: 92, 1957.

[24] EDITORIAL—*Am. J. Psychiat.*, **113**: 663, 1957.

[25] DICKEL, H. A., *et al*—*J.A.M.A.*, **163**: 422, 1957.

[26] LAURENCE, D. R., *et al*.—*Brit. M. J.*, **1**: 700, 1958.

GENERAL PRACTICE DIGEST

TREATMENT OF FILARIASIS

Diethylcarbamazine is the drug of choice in the treatment of filariasis. It is effective against all the pathogenic filariae though to a variable degree. It is available in 50 mg. tablets (banocide or hetrazan). The dose is 12 mg./kg. per day for twenty-one days. The maximum dose is not given initially, as untoward reactions, due probably to irritation or death of the parasites, may follow its use. The drug is given at a dosage of 1 mg./kg. for the first day, 2 mg./kg. the second day, and then increasing by 1 to 3 mg./kg. per day—the full dose being built up to in 5 or 6 days. If the patient reacts violently to the drug, a smaller drug level may have to be maintained for a week or longer, before the dose is finally stepped up.

Diethylcarbamazine is practically non-toxic, though it may sometimes cause nausea and vomiting, and in full doses headache and giddiness. Allergic reactions are important, and may sometimes be frightening. Minor allergic reactions can be controlled by antihistamines, probably due to their mildly soporific and antipruritic action. In the more severe reactions, the drug should be reduced in dosage and maintained at this level for a few days. ACTH, cortisone and prednisone are helpful in controlling such reactions.

Cortisone eye drops have been used to allay the intensity of reactions in the eyes in patients with onchocerciasis. These patients should be under close medical supervision during the first few days of treatment.

No special treatment is necessary for the lymphangitis and lymphadenitis of *W. bancrofti*. Mild lymphadenoma may be reduced by elevating the affected part, and strapping or supporting it with elastic bandages or stockings. The combination of pressure bandage with ACTH is useful, but ACTH alone does not do much good. Amputation of a limb which has become a liability because of its weight or an enormously enlarged scrotum may occasionally be necessary. Surgery cannot, however, re-establish the continuity of a blocked lymphatic drainage system.

Another drug which should be mentioned in the treatment of filariasis is antrypol (suramin). It is available as a dry powder in 1 g. ampoules and is administered intravenously. The solution is prepared fresh with warm distilled water. A test dose of 0·1 g. is injected slowly, and the patient is watched for any immediate anaphylactoid reaction. The urine is tested 24 hours after injection for albumin and casts. If neither is present then 1 g. is given, followed by 1 g. weekly for 5 weeks, if possible. Before each injection the urine should be tested for albumin and casts. If there are more than just a few casts in the spun deposit a week after the last injection then no more of the drug is given for another week, when the urine may be clear. If however, evidence of renal damage persists no more antrypol is given.

This drug is used especially in onchocerciasis, because banocide or hetrazan does not always kill the adult worms, and two or three courses of banocide may be required for eradication of the filarial infection. A course of antrypol totalling 5 to 6 g. usually suffices to eliminate all adult onchocerca.

From an article by S. Ahmed—
Brit. J. Clin. Pract., **14**: 697, 1960

CURRENT MEDICAL LITERATURE

Current Therapy of Systemic Lupus Erythematosus

DUBOIS, E. L. (*J.A.M.A.*, **173**: 1633, 1960) from the Department of Internal Medicine, the University of Southern California School of Medicine and the Los Angeles County General Hospital in giving a comparative evaluation of corticosteroids and their side-effects with emphasis on fifty patients treated with dexamethasone observes:

The current clinical concept of systemic lupus erythematosus is reviewed on the basis of a 10-year study of 400 patients treated with rest, salicylates, antimalarials, and corticosteroids. Particular attention was given to the therapeutic value and side-effects of the corticosteroids. Fifty patients received dexamethasone for periods up to 15 months. The maximum dose was 24 mg. per day for three weeks and the average maintenance dose was 2·7 mg. per day. Clinical improvement closely paralleled that obtained by other corticoids. Side-effects included oedema (28 per cent), hirsutism (28 per cent), and insomnia (8 per cent), and serial upper gastrointestinal roentgenograms performed in 28 patients revealed peptic ulcers in 5. There was a disappearance of all the clinical and laboratory abnormalities produced by the disease with the exception of longstanding renal involvement.

Newer Uricosuric Agents in Gout

SEEGMILLER, J. E. AND GRAYZEL, A. I. (*J.A.M.A.*, **173**: 1077, 1960) from the National Institute of Arthritis and Metabolic Diseases, National Institutes of Health, U.S. Public Health Service, write:

Zoxazolamine in doses up to 125 mg., administered to patients with gout, increased the urinary excretion of uric acid and lowered the serum urate level. In some patients increasing the dosage to 250 mg. intensified these effects to the point of causing a urate crystalluria. Sulphinpyrazone and probenecid each had additive uricosuric effects when given with zoxazolamine, but all three of these uricosuric drugs (especially sulphinpyrazone) were antagonised by sodium salicylate. Given without due precautions during acute attacks of gout, the uricosuric drugs may cause exacerbations. They should be given during quiescent phases of the disease. The newer drugs are of special value in treating patients who have failed to respond to probenecid. A large fluid intake, alkalinisation of the urine, and an initial low dosage of the drug helps prevent urate deposition in the urinary tract.

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Adrenocortical Steroids in Infectious Diseases

SPINK, W. W. (*Ann. Int. Med.*, **53** : 1, 1960) from the Department of Medicine, University of Minnesota Medical School, Minneapolis, gives in the following lines the summary of his observation on the effect of adrenal cortical hormone in the management of some selected cases with infectious diseases :

Adrenal cortical steroids and ACTH have been evaluated in 81 selected patients treated between 1950 and 1959 at the University of Minnesota Medical Centre. This has included an analysis of two main groups of patients managed in this manner : first, patients with an infection and peripheral vascular collapse, and second, patients suffering from the ill effects of inflammation due to infections or to drugs.

Studies were made of 38 patients who had acute bacterial shock, 25 of whom had vascular collapse due to gram-negative endotoxin. Although the mortality rate in the 38 patients was 60 per cent, large doses of steroid did contribute to the recovery of certain patients. It is recommended that 500 to 1000 mg. of hydrocortisone be administered intravenously within the first 24 hours. Subsequent therapy with hydrocortisone or one of the analogues can often be confined to smaller doses given orally, and for a period of only a few days. The clinical observations have been substantiated by studies on experimental endotoxin shock in the laboratory.

Inflammation occurring during the course of an infectious disease can be highly deleterious when certain tissues are involved, such as those of the heart and central nervous system. Steroid therapy has been effective in selected cases of tuberculosis, brucellosis, infectious mononucleosis, the complications of mumps, which include orchitis, purpura and encephalomeningitis, acute rheumatic fever, hepatitis, trichinosis, and severe drug reactions, especially those due to penicillin.

The basic philosophy underlying the selective use of steroids in this medical centre is the administraton of large doses of adrenal cortical steroid to seriously ill patients for a brief period of time. No undesirable side-effects have been observed when these criteria have been followed. The benefits have far outweighed the possible hazards.

Griseofulvin in Dermatomycoses

ANDREWS, G. C., DOMONKOS, A. N. AND SILVA, A. JR. (*J.A.M.A.*, **173** : 1542, 1960) from New York City, write :

Griseofulvin was administered orally in uniform doses of 1,000 mg. daily to 80 patients with dermatomycoses due to *Trichophyton mentagrophytes, Trichophyton rubrum, Candida albicans, Epidermophyton floccosum,* and *Microsporum lanosum*. Studies of blood and urine were made at four-week intervals. Six of the ten patients with gastrointestinal side-effects were forced to stop therapy. Success of the medication varied with the site and fungus. Greatest success occurred in pitients with rubrum tinea corporis and in those with onychomycosis due to *T. rubrum* and *T. mentagrophytes*. Acute dermatophytosis, especially of the soles, toe webs, and groin, showed less prompt response to orally given griseofulvin than to topical therapy. Dermatoses similar to fungus infections did not respond to griseofulvin.

Toxicity of Vitamin K

SMITH, A. M. JR. AND CUSTER, R. P. (*J.A.M.A.*, **173** : 503, 1960 from the Department of Medicine, Presbyterian Hospital and Departments of Pathology, and Clinical Haematology and Chemotherapy, the Presbyterian Hospital, University of Pennsylvania observe :

Vitamin K and its analogues possess toxic properties that can induce hypoprothrombinaemia and other alterations in liver function if drugs containing this vitamin are administered in excessive dosage or over prolonged periods. These drugs should not be prescribed unless hypoprothrombinaemia, not due to advanced liver disease, has been shown to be the cause of haemorrhagic phenomena. Large doses of such drugs should not be given to patients with significant liver disease, and even small doses should be discontinued after several days if the level of prothrombin activity does not increase beyond the standard deviation of the test.

Percutaneous Needle Liver Biopsy in Malignant Neoplasm

NELSON, R. S. AND SALVADOR, D. S. J. (*Ann. Int. Med.*, **53** : 179, 1960) from the Department of Medicine, the University of Texas, M. D. Anderson Hospital and Tumor Institute, Houston, Texas, write :

Evaluation of 330 percutaneous needle liver biopsies in 280 patients referred with proved or suspected malignant neoplasia showed 78.1 per cent accuracy in detecting liver involvement in a group of proved malignant neoplasms.

Leukaemic infiltration was found in eight of 12 cases of leukaemia of all types ; but in 30 cases of lymphomatous disease, liver involvement was discovered only five times. Hodgkin's disease was diagnosed unequivocally in no instance, although on autopsy, six out of 10 cases showed infiltration.

Six patients hemorrhaged following biopsy, with three deaths. Three of the six showed myeloid metaplasia of the liver, and the other three instances of bleeding occurred in patients with prolonged x-ray or chemotherapy, with evidence of bone marrow damage.

Leukaemic patients may bleed following biopsy without apparent cause, but are especially liable to this complication when myeloid metaplasia of the liver is present, or when subjected to long-term chemotherapy.

Percutaneous needle biopsy of the liver is a valuable tool in the evaluation of malignant neoplastic disease. In our experience, complications have not been associated with simple tumour involvement of the liver, but have occurred in cases where there was definite evidence of bone marrow injury. Needle biopsy should be employed in confirmed neoplasia with caution when (1) myeloid metaplasia is present or suspected, especially with evidence of bone marrow depression, and (2) when there has been prolonged x-ray, radio-active isotope or chemotherapy treatment, with evidence of bone marrow damage.

The Problem of Management of Nasal Carriers of Staphylococci

MARTIN, W. J., NICHOLS, D. R. AND HENDERSON, E. D. (*Proc. Staff Meet. Mayo Clinic*, **33** : 282, 1960) from the Sections of Medicine and Orthopaedic Surgery, Mayo Clinic, Mayo Foundation write :

Among the procedures employed by us in the management of nasal carriers of staphylococci, none were found to be very effective. However, it seems reasonable in certain situations to attempt to control the carrier state temporarily by the use of antibiotics intranasally or systemically. Local use of antibiotics seems generally preferable to their systemic use. Of the three methods of using antibiotics locally employed by us, there is no overriding reason for choosing one over the other, but others have reported a higher failure rate from ointments than from solutions. Between saline solution and sesame oil as vehicles for antibiotics in nasal sprays, again there is no reason for marked preference but saline solution though easier to use may be associated with a slightly higher failure rate than the oil.

At present the detection and management of certain nasal carriers of staphylococci must concern those of us interested in the control of staphylococcal infections. The question of whether the healthy carrier is a major source of danger in the genesis of clinical infections cannot be answered at this time. Obviously many medical, economic, and psychologic factors must be considered in evaluating these nasal carriers of staphylococci, but currently if a person is incontrovertibly disseminating a virulent strain responsible for clinical infections, removal of that individual from the hospital environment is obligatory.

Antibiotic-Resistant Staphylococci

Studies in many parts of the world revealed several years ago that more than half the strains of *Staphylococcus* aureus isolated from hospitalised patients were resistant to penicillin, streptomycin, and the tetracyclines. This led to the fear that staphylococcic infections would become untreatable because of the development of resistance to each new antibiotic as it appeared. The relationship between use of various antibiotics and the amount of resistance that would develop was not known, and studies along this line have been awaited with interest.

In an article, Bauer and co-workers (*J.A.M.A.*, **173** : 475, 1960) have reported definite differences in resistance of staphylococci to commonly used antibiotics in relation to the number of kilograms consumed per year in a general hospital. Particularly striking was the fact that a relatively small percentage of strains develop resistance to chloramphenicol, despite the consumption of large amounts of this antibiotic. Similar results have recently been reported by Fisher (*A.M.A., Arch. Int. Med.*, **165** : 410, 1960). The failure to develop a higher percentage of chloramphenicol-resistant staphylococci is due in part to the emergence of fewer resistant mutants to this antibiotic, but it may also be attributable to rapid back-mutation of resistant strains to susceptibility and to the replacement of resistant bacteria by sensitive strains. Chloramphenicol-resistant strains would appear to be genetically unstable, with a decreased ability to survive when competing with other strains in the absence of the drug.

Administration of two antibiotics simultaneously has been widely practised in the treatment of staphylococcic infections, in an attempt to prevent the emergence of drug-resistant organisms. Chloramphenicol and erythromycin represent the most widely used combination in the hospital where the studies of Bauer and co-workers (*Brit. M. J.*, **2** : 1377, 1960) were carried out. Despite the use of large amounts of these two drugs in combination, it is of interest that the incidence of resistant staphylococci has gradually increased to only 20 per cent for chloramphenicol and 30 per cent for erythromycin. Only 16 per cent of strains were resistant to both antibiotics and almost all of these strains were also resistant to penicillin, tetracyclines, and streptomycin. Barber and co-workers, in England, observed what they interpreted to be cross-resistance between erythromycin and chloramphenicol and no longer advocate use of this combination. The results of Bauer and co-workers do not support the concept that cross-resistance occurs commonly between these two antibiotics.

The other principal method used to combat the development of antibiotic-resistant staphylococci has been an attempt to restrict antibiotic usage, and specifically to withhold certain antibiotics altogether except under special circumstances. In a recent study reported by Barber and co-workers, restriction of penicillin led to a reduction in the incidence of hospital-acquired infections due to resistant staphylococci and an increase in the number of infections due to penicillin-susceptible strains. Studies of this sort are of great interest but do not settle the question whether restriction of various antibiotics should be a routine policy in hospitals. It is rather doubtful whether, aside from use of antibiotics only where they are actually indicated, the restriction of any one or a group of antibiotics is necessary at present. When the infecting organisms are resistant to penicillin, streptomycin, and the tetracyclines, as they commonly are, the physician still has the following agents to choose from : vancomycin, ristocetin, erythromycin, chloramphenicol, kanamycin, novobiocin, triacetyloleandomycin, and furaltadone. For milder infections, it should always be possible to select two antibiotics which can be taken simultaneously by mouth with minimal difficulty. For the more serious infections, vancomycin given alone by the intravenous route has proved effective. To date, after it has been used on a fairly large scale for more than three years, strains of staphylococci resistant to vancomycin have not been encountered. (ED., *J.A.M.A.*, **173** : 545, 1960).

Acute Appendicitis with Perforation

BRADHAM, R. R., KREDEL, F. E. AND GREEN, J. F. (*J.A.M.A.*, **173** : 342, 1960) from Medical College of South Carolina from an analysis of the study of a group of 98 patients with appendicitis with perforation to determine symptoms and findings that might help predict perforation in patients suspected of having acute appendicitis observe : Management of appendicitis with perforation

is outlined on the basis of the results in this series. The initial symptoms was pain with tenderness in the right lower abdominal quadrant, and it occurred in 97 patients; there was nausea in 82, vomiting in 77, diarrhoea in 19, and constipation in 13. Eighty-nine patients had fever, an elevated pulse rate, and an elevated leucocyte count. The duration of symptoms was not informative. The incidence of perforation was much higher in children than adults. There were 30 patients 10 years of age or younger, and 61 were 20 years of age or younger. The authors are inclined to advise immediate operation provided the patient is adequately prepared.

Urinary Excretion of Calcium and Phosphorus after Surgery

WYNNE, K. N., CHORLTON, S. H. AND STARR, K. W. (*Surg. Gynec. & Obst.*, **110** : 519, 1960) from the Special Unit, New South Wales State Cancer Council, Prince of Wales Hospital, Randwick, New South Wales, Australia observe :

Urinary excretions of calcium and phosphorus, based on 4 hourly urine collections from 23 patients, are presented for the 3 days following extensive operations.

Fourteen patients who underwent extensive abdominal operations showed; (a) marked phosphorus diuresis with a peak incidence 8 to 12 hours after operation; (b) phosphorus retention beginning 2 days after operation; (c) postoperative retention of urinary calcium.

Nine patients whose operations were classed as extensive superficial dissections exhibited a similar but much less marked pattern of excretion. A calcium diuresis was a frequent feature of this group.

Alterations in Fat and Nitrogen Metabolism after Total and Subtotal Gastrectomy

LAWRENCE, W., VANAMEE, P., PETERSON, A. S., MCNEER, G., LEVIN, S. AND RANDALL, H. T. (*Surg., Gynec. & Obst.*, **110** : 601, 1960) from the Department of Surgery, Memorial Centre, and the Division of Experimental Surgery and Physiology, the Sloan Kettering Institute, New York give in the following lines the summary of their observations on the metabolic study in a series of 25 patients after total gastrectomy and 17 patients after subtotal gastrectomy :

The mean fat absorption after total gastrectomy was 81·7 per cent of intake (normal range is 92 to 100 per cent), but there was much variation between patients. The per cent absorption of dietary fat in individual patients was completely unaffected by variations in fat intake, generally decreased by increasing dietary carbohydrate, and usually increased when hydrochloric acid supplements were administered.

Protein absorption was also decreased after total gastrectomy. Increasing the dietary carbohydrate reduced nitrogen absorption, but total retention of nitrogen was slightly increased as judged by urinary nitrogen measurements. Hydrochloric acid supplements decreased protein absorption slightly, in contrast to the findings with fat absorption, but this did not cause a negative nitrogen balance.

Comparing the mean dietary protein intake required to achieve 'zero balance' after total gastrectomy with similar calculations from groups of normal subjects demonstrated a definite increase in dietary nitrogen requirement for these patients.

Metabolic studies of patients after subtotal gastrectomy showed similar, but less striking, variations in both fat and nitrogen metabolism.

Comparison of our metabolic data with body weight studies in the same patients showed a poor correlation between nutritional state and the observed absorption defects. The most important factor in adequate nutritional maintenance seemed to be the ability to control postprandial symptoms sufficiently to allow adequate intake.

With careful dietary management the majority of these patients could be maintained in adequate nutritional state, and this fact would seem to justify continued performance of total gastrectomy, when indicated, for cancer of the stomach.

Cause and Treatment of Oedema of the Arm following Radical Mastectomy

SMEDAL, M. I. AND EVANS, J. A. (*Surg., Gynec. & Obst.*, **111** : 29, 1960) from the Departments of Radiology and Internal Medicine, the Lahey Clinic, Boston write :

Oedema of the arm after radical mastectomy is caused by thrombophlebitis with concomitant obstruction of the lymphatics in the vascular sheath. The condition is analogous to the familiar postoperative or postpartum phlegmasia alba dolens of the leg. The importance of its recognition lies in the possibility of prophylaxis and treatment by anticoagulants and clot solvents that are now available.

Oedema of the arm is most often seen in the immediate postoperative period. When it occurs later, recurrent thrombophlebitis is the cause more often than recurrent cancer.

A swollen arm was found in 57·5 per cent of all patients seen at the Lahey Clinic who had radical mastectomy in 1958. Of the patients referred for roentgen ray therapy after radical mastectomy, 85 per cent had postoperative swelling of the arm; 45 per cent of this group had swelling of the arm before roentgen ray treatment was started.

Five abnormalities in the venogram confirm the clinical diagnosis of thrombophlebitis : (1) obstruction (2) a filling defect in the lumen of a vein, not obviously an artefact; (3) filling of collateral veins; (4) retrograde filling of veins, and (5) slow emptying.

Irradiation and Surgery in the Treatment of Bronchogenic Carcinoma

BLOEDORN, F. G. AND COWLEY, R. A. (*Surg., Gynec. & Obst.*, **111** : 141, 1960) from the Division of Radio-

therapy, Department of Radiology, and the Division of Thoracic Surgery, Department of Surgery, University of Maryland Hospital, Baltimore write :

A comparison of the results among the three groups of patients is not possible because of the small number of cases and the disparity of the material. The group of patients who underwent postoperative irradiation is a selected group in the sense that all of the patients had mediastinal metastases. The group of patients treated by irradiation alone constituted those with more advanced disease. The group considered for combined cobalt 60 and surgery were not early cases, however, since 50 per cent of these were considered inoperable.

Some interesting facts can be pointed out because of their possible significance in this study to date : (1) the high resectability rate after cobalt therapy; (2) the low incidence of mediastinal lymph node metastasis after irradiation; (3) the lower than anticipated incidence of distant metastases in the cases in which combined therapy was applied; (4) the lack of complications imputable to the combined procedures.

It is obvious that radical irradiation with cobalt teletherapy can be delivered for bronchogenic carcinoma which will encompass the primary tumour and its most common sites of extension, mediastinal and supraclavicular lymph node bearing areas, with good tolerance. This irradiation will be efficient in controlling the primary tumour and tumour within mediastinal nodes in a considerable number of cases. Radical operation has been possible in this series after irradiation treatment by telecobalt without increasing the rate of postoperative complications. .The resectability rate is increased by preoperative irradiation.

This form of therapy has suggested the possibility of sterilising mediastinal lymph node metastases by means of cobalt irradiation. The need for postirradiation operation to remove the site of the primary tumour is ever present because of failure in always controlling the primary tumour. Of the 44 patients treated by cobalt alone, and cobalt plus surgery, 21 of them had active disease at the site of the primary tumour.

It is believed that the evidence so far accumulated justifies pursuing this study.

Importance of ECG in Open Cardiac Surgery

PATON, B., PEARCY, W. C. AND SWAN, H. (*Surg., Gynec. & Obst.*, **111** : 197, 1960) from the Department of Surgery, University of Colorado School of Medicine, Denver write :

The electroencephalographic changes resulting from superior vena caval obstruction have been described and the usefulness of the electroencephalogram in detecting such obstruction has been emphasised. Six case histories have been described illustrating this point.

The need for observing multiple electroencephalographic leads, recorded from both sides of the head, has been stressed.

The use of the electroencephalogram to detect the adequacy of collateral circulation in the presence of a persistent left superior vena cava has been described.

Physiopathology of Stress Incontinence

LAPIDES, J., AJEMIAN, E. P., STEWART, B. H., LICHTWARD, J. R. AND BREAKEY, B. A. (*Surg., Gynec. & Obst.*, **111** : 224, 1960) from the Sections of Urology, Department of Surgery, University of Michigan Medical Centre and Veterans Administration Hospital, Ann Arbor, and Wayne County General Hospital, Eloise, Michigan write :

Female stress incontinence is usually dne to an abnormal shortening of the urethra or urinary sphincter when the patient assumes the standing position.

Stress incontinence is corrected by suturing the anterior wall of the urethra to overlying symphysis pubis and rectus fascia by anterior urethropexy so that the urethra will not shorten when the patient gets to her feet.

The phenomena of onset of stress incontinence, with repair of cystocele, and improvement of stress incontinence, with development of procidentia or cystocele, are readily explained by the variations in intravesical pressure on exertion in patients who demonstrate abnormally short urethras in the erect position.

Stress incontinence is strictly a urologic and not a gynaecologic entity in that it can occur without any obvious defect of the genital tract and can be completely alleviated by anterior urethropexy in the face of unrelieved procidentia, urethrocele, and cystocele.

Oral Moniliasis in the Newborn and Neonatal Morbidity

KAUL, K. K., SHAH, P. M. AND POHOWALLA, J. N. (*Indian J. Pediat.*, **27** : 115, 1960) from the Department of Pediatrics, M.G.M. Medical College, Indore, give in the following lines the summary of their observations :

The oral cavities of 713 unselected neonates born in M. Y. Hospital, Indore, were routinely swabbed and the material cultured for evidence of Candida. Strains of Candida isolated were determined by sugar reactions. During the lying-in period in the hospital these infants were studied with regard to morbidity and mortality.

113 cases yielded positive cultures for Candida of which twenty-nine developed thrush before discharge from hospital. The remaining 600 negative cases served as controls with regard to the incidence of morbidity and mortality as compared to the 113 positive cases.

The incidence of both clinical thrush and positive cultures from oral cavities with clinical thrush was higher in prematures as compared to normals.

Of the various complications developing during their stay in the hospital, diarrhoea was most frequent. The incidence of morbidity and of mortality was higher in culture positive cases as compared to the control series. Oral moniliasis, both culturally positive and clinically manifested thrush occurred more frequently in artificially fed infants as compared to those who were breast fed.

Candida tropicalis and Candida pseudotropicalis were the most frequent strains found in oral cavities of newborns in this region. These two strains were also most frequently responsible for neonatal clinical thrush in this study.

CURRENT TOPICS

ALL-INDIA LEPROSY WORKERS' CONFERENCE BOMBAY, DECEMBER, 1959

An illuminating editorial, Visit to India, appeared in the Leprosy Review, *the quarterly publication of the British Leprosy Relief Association, London, in April, 1960. The same is here reproduced in extenso by courtesy of the Editor,* Leprosy Review:

The 7th Conference of the All India Leprosy Workers and the 4th of the Indian Association of Leprologists was a joint affair, held in Bombay, 14-18th December 1959. This highly successful Conference had as Chief Patron Shri Sri Prakasa, Governor of Bombay, and as Patrons Shri Y. B. Chavan, Chief Minister, and Dr. Jivraj N. Mehta, Minister of Finance, and as Chairman of the Executive Committee Shri N. K. Tirpude, Minister for Social Welfare. The Secretary was Dr. T. B. Patel, and Joint Honorary Secretaries Dr. P. Kapoor and Dr. J. N. Vazifdar. Two publications for the Conference were issued by Hind Kusht Nivaran Sangh (Indian Leprosy Relief Association). These were the "Programme", which contained summaries of the 29 papers delivered at the Conference, and "Souvenir" which contained 100 pages and 76 illustrations, chiefly made up of the following articles:

All India Leprosy Workers' Conferences	T. N. Jagadisan
Indian Association of Leprologists, Its Origin and Development	K. R. Chatterjee
Government of India and Leprosy Control	Y. K. Subrahmanyam
Leprosy Control Work in Bombay State	T. B. Patel and P. Kapoor
Pathology of Early Lesions in Leprosy	V. R. Khanolkar
The Diagnosis of Leprosy and its Difficulties	S. N. Chatterjee
The Leprosy Patient and his Treatment	R. Muir
The Present Concept of the Role of Isolation in the Control of Leprosy	N. Figueredo
Diet for Leprosy Patients ...	M. V. Radhakrishna Rao and M. S. Kotnis
The Role of Physiotherapy in Leprosy	Paul W. Brand
Rehabilitation of Leprosy Patients	M. D. Amte
Difficulties in the Rehabilitation of Leprosy Patients ...	M. Diwan
Leprosy and Law	P. Sen
Bibliography of Publications on Leprosy from India ...	N. Mukerjee

The Editor was present throughout at the actual Conferences and enjoyed them and the discussions very much. The best way to give readers an idea of the interesting fare offered would be to give our own summaries of the papers delivered.

1. Dr. S. N. Chatterjee dealt very fully and helpfully with The Diagnosis of Leprosy and its Difficulties. His paper in full text, with 62 illustrations, is available in the Souvenir, p. 38. He began with skin conditions simulating leprosy, from leucoderma to occupational dermatitis, and dealt with derman leishmaniasis, neurofibroma, many nerve conditions both primary and secondary, vascular conditions, and gave wise advice about the assessment of thickened nerves, and bacilli in smears, and a warning that leprosy is sometimes missed owing to some complication, e.g., a change in a leprotic lesion which causes it to be mistaken for erysipelas or cellulitis. From experience in Africa, about the only thing we might add to Dr. Chatterjee's big list is onchocerciasis.

2. Dr. Dharmendra read a paper on the Classification of Leprosy. He described the position reached at the Tokyo Congress, 1958. The maculo-anaesthetic group favoured by Indian leprologists does not seem acceptable to the Hispano-American and Luso-American workers, and the Tokyo Congress made no recommendation on this point. Indian leprologists want polyneuritic lesions to be placed in a separate group, in the sense of periphero-neuritic. Dr. Dharmendra comments that though it has been agreed that the basis of primary classification of leprosy should be clinical, the stress always tends to be placed on histopathology.

3. Dr. N. Figuerado also read a paper on the Classification of Leprosy. From his studies using Dharmendra antigen and bacteriological examinations on patients and contacts he recognises leprosy in the following stages: infected or silent phase, primary lesions, pre-nonlepromatous macules, minor or major tuberculoid, maculoanaesthetic, indeterminate, reactional tuberculoid, borderline, primary or pure polyneuritic, prelepromatous macules, and lepromatous. The progress of all lesions tends either towards the polyneuritic or lepromatous. The indeterminate also tends this way or to the lepromatous through the reactional tuberculoid and borderline phases. Transition from the maculo-anaesthetic to the minor or major tuberculoid has not been observed, nor the reverse. Minor and major tuberculoid and the maculo-anaesthetic tend only towards the polyneuritic. He recommends the inclusion of reactional tuberculoid in the intermediate group, and applying "borderline" to lesions on the verge of progression to lepromatous.

4. Dr. J. Ross Innes of London read a paper on Mercaptan Compounds in Leprosy and Tuberculosis. G. W. Driver and G. R. Davies contributed to this paper a valuable survey of the literature on the mercaptan compounds. The clinical study of these hopeful compounds began in 1950 by Del Pianto who tried sodium ethyl sulphate against animal and human tuberculosis and in 1958 reported at the 7th International Congress of Leprosy that he had had good results against leprosy. Other workers studied ethyl mercaptans, and in 1956

Davies and Driver and others of ICI Research Laboratories reported on the study of 200 mercaptan and related compounds in mice tuberculosis and selected diethyl dithiolisophthalate as the most active. They also found it to be effective by inunction. Davey and others have reported on its action in human leprosy and the results so far suggest an unusually rapid bactericidal effect. Drug resistance develops at about the fourth or fifth month when the ICI product Etisul is used alone, but Davey has latterly found that the use of DDS and DPT by mouth from the beginning of the trial delays indefinitely the onset of drug resistance and the total effect is a reduction in the bacterial index greater and faster than anything known before. There is a strong case for wider clinical trials against leprosy of this very interesting drug. At the present time, trials are in progress against human tuberculosis with equally hopeful results. It is not likely that it will be an expensive drug when finally it arrives on the market.

5. Drs. N. Mukerjee and P. Ghosal described Recent Developments in the Chemotherapy of Leprosy, discussing depot injections of DDS, newer sulphone derivatives, new drugs and antibiotics and they called for more trials on many of them, both alone or in combination, for any therapy which is more effective than DDS will be welcome. For parenteral action they consider the best is a depot suspension of microcrystalline DDS in 0·2 per cent sodium carboxy methyl cellulose in normal saline. They found DDSO as effective as DDS, DPT is as effective as DDS and a useful alternative drug under certain circumstances. Further trial with Etisul is necessary, also the benzaldehyde derivative of INH. Combination of DDS with either INH, DPT, or Etisul, seems to produce a little better effect than DDS alone.

6. Dr. A. T. Roy read a paper on the Treatment of Leprosy with SU 1906 (DPT). He tried SU 1906 or 4-butoxy-4 dimethyl-aminodiphenylthiourea in 5 lepromatous, 1 major tuberculoid, which was bacterially positive, and 1 minor tuberculoid (this was a child aet. 4 years). The children in the series were given dosage of 0·5 to 1·5 g. daily. The adults were given 1 to 3 g. These doses were well tolerated and clinical improvement was noted. The adult doses were then tried on the children and were well tolerated. The lepromatous cases had their dosage gradully increased, and all took 4·5 g. without any toxic signs or reaction. One of the lepromatous cases began to show signs of reaction when 5 g. dose was given, but none of the 7 cases showed any sign of reaction with the recommended dose of 1 to 3 g. A progressive reacting case was now included in the series, who was intolerant to sulphone of any type. He has done well on 2·5 g. without reaction, and with rapid clinical improvement.

The bacillary index was influenced, with results much the same as Davey found in his cases, though with ups and downs.

7. Drs. J. R. Somerset, N. Mukerjee and N. R. Sen dealt with Lagophthalmos in Leprosy: Its Surgical Treatment. Complete or incomplete defect of closure of the eyelids is common in leprosy, often accompanied by ectropion of the lower lid. This leads to exposure keratitis and its complications. The more common operation available is lateral tarsorrhaphy, but Axenfeld's operation is preferable in some cases. This consists of the insertion of a silk suture under the skin of the upper and lower lids and under the lateral and medical tarsal ligaments. The size of the palpebral fissure can thus be adjusted to its optimum by tightening the suture. The stitch is left in position for several months until its track has become fibrous. The removal of the stitch thus leaves a fibrous band which takes over its action. The authors used this operation in 6 cases with good success.

8. Dr. N. H. Antia described the Correction of Facial Deformity in Leprosy by Plastic Surgery. Though large numbers of leprosy cases are now being cured, if the treatment has been started late there will be many left with disfigurements and deformities. Deformities of the hand and limbs will need surgical correction in order to help the patient to become a useful citizen, and disfigurements of the face by perpetuating the stigma attached to leprosy will hinder rehabilitation. The author therefore has taken special interest in the correction of facial deformities in the Kondhwa Leprosy Hospital. (a) The sunken nose is the most striking of these and he has found the operation of postnasal epithelial inlay, by supplying fresh lining through an intraoral operation, to be very satisfactory, even in advanced cases, and support can then be provided by a dental prosthesis or a bone graft. (b) Total destruction of the nose is best dealt with by a tube pedicle rhinoplasty. (c) Lagophthalmos or paralysis of the orbicularis muscle of the eye, which is common in leprosy and may lead to loss of sight, can be corrected by taking advantage of the fact that the adjacent temporalis muscle innervated by the 5th nerve is usually not affected. A fascial sling is made to encircle the palpebral fissure and attached to an innervated slip of the temporalis muscle. Its contraction closes the eye and corrects the deformity. This method is better than lateral tarsorrhaphy, which is apt to fail in part by recurrence of the trouble in the residual unclosed portion of the palpebral fissure. (d) Lost eyebrows can be replaced by grafting hair-bearing scalp as a free graft, or as a temporal artery pedicle flap. (e) A face lift can be given to correct the wrinkled appearance of premature ageing. (f) Elongated ear lobes can be trimmed, and thickened skin and nodules shaved down. (g) Perforation of the palate can be closed using a plastic procedure which sufficiently elongates the soft palate to produce normal speech. The author makes a plea for the opening of centres for plastic and reconstructive surgery and for training surgeons in this highly satisfactory field.

9. Dr. R. H. Thangaraj dealt with Foot Ulceration in Leprosy. He wished to stress the distinction between the pathological and mechanical factors in the causation of ulcers of the feet and absorption of bones. Arterial changes may both lead to ulceration and result from it. The limitation of blood supply to an ulcer in leprosy is not due to vasoconstriction but to vasostrangulation by a mass of nonelastic fibrous tissue caused by previous ulceration. The first ulcer is due to

an excessive amount of walking, a badly fitting shoe, or some slight injury. It can be healed, but as it heals creates fibrous tissue which in its turn predisposes to further ulceration. At the time of the first ulcer the patient will be much helped by hospitalisation and education in the prevention and care of ulcers. The author lists causative mechanical factors; (a) excessive walking; (b) injuries from sharp stones, thorns, and nails in the shoe; (c) irregular weight bearing; (d) the concentration of weight at certain points of the foot; (e) the projection of bone downwards towards the sole of the foot causing localised pressure; (f) drop foot and inversion caused by paralysis. For the last mentioned the standard operation is to fix the tibialis posterior to the middle cuneiform bone with stainless steel wire. The author's modification is to pass the tibialis posterior through the interosseous space about 5 inches (12·7 cm.) above the ankle and then through the extensor digitorum longus and then into the tibialis anterior. A plaster below the knee is applied to maintain the foot in dorsiflexion, and the plaster is removed in 4 weeks. Physiotherapy is fully used.

10. Dr. D. N. Bose dealt with Plaster Therapy with Physiotherapy in Deformities and Chronic Neurological Syndromes in Leprosy Patients. He described simpler methods which can be used with success in default of skilled surgical personnel and equipment. The application of plaster rests and heals many deformities, and for the prevention of recurrence he gives physical exercises to the parts, regular massaging with oil, preferably hydnocarpus oil, and subcutaneous injections of hydnocreol in doses of 3 to 4 ml. at least twice a month in the deformed parts and by the sides of the nerves.

11. Dr. M. Nishiura gave a paper on Electron Microscopic Studies of Human Leprosy Lesions. He has used metal-shadowing of ultra-thin sections of leprosy lesions to study the fibrous elements by electron-microscopy (collagen, reticulin, and elastic fibres). In tuberculoid lesions many collagen fibrils are separated from each other or dissolved but elastic fibres look normal and are easily recognised. In lepromatous lesions, collagen, reticulin, and elastic fibres are well preserved, though the elastic fibres are a little difficult to identify. The necrotic process in tuberculoid skin and nerve lesions was also studied. Intracytoplasmic coagulative necrosis was noted in tuberculoid skin lesions in a few isolated cells, but in nerve lesions it was found on a large scale, and the whole nerve trunk may be packed with necrotic masses.

12. Drs. M. Nishiura, S. M. Sirsat and V. R. Khanolkar also reported on Electronmicroscopic Study of Leprosy Lesions. After metal-shadowing of ultra-thin sections from the skin and great auricular nerves the electronmicroscopic study showed that the collagen fibrils are not damaged in lepromatous lesions, but in tuberculoid they are often separated from each other or entirely absent. Elastic fibres are more easily found in tuberculoid than in lepromatous lesions, and they do not appear abnormal. A few isolated necrotic cells which show coagulative changes in the cytoplasm are found in tuberculoid skin lesions. The necrotic process in tuberculoid nerve lesions begins as a coagulation of the cytoplasm and the formation of myeloid bodies and droplets of lipid inside the cytoplasm of epithelioid cells. Destruction of the cell membrane of these necrotic epithelioid cells is followed by the release of various degenerated cell materials which form a coagulation necrosis of the whole nerve trunk. The commonest form of the necrotic mass is a helicoidal thread at least 15 to 25μ in breadth. These threads mass together and may be found in an occasional necrotic cell of the skin and more widely in necrotic lesions of the peripheral nerves.

13. Dr. V. R. Khanolkar has a paper on the Pathology of Early Lesions in Leprosy, which was published in the Souvenir of the Conference pp. 30-37 and is abstracted here and given for the sake of completeness. The paper has one schematic text-figure of the cellular elements inside the endoneurium and perineurium in relation to the descending nerve fibre in leprosy. There are also 13 illustrations of the histology of nerve fibres and cellular elements in leprosy, some of them electronmicrographs. About 12 years ago Dr. Khanolkar began a careful clinical and immunological examination and study of the histology of the skin, in early cases of leprosy and contacts. He later added a standardised lepromin test, and the fluorescence microscopy for the fluid obtained from skin biopsies, newer techniques for studying the condition and structure of the peripheral nerve fibres, and finally electronmicroscopy for the finer structure of cell constituents and the intercellular material.

The group of contacts with leprosy comprised 138 adults and 24 children who were clinically free of leprosy. Of them the 24 children and 68 adults showed the presence of acid-fast bacilli in the skin, after application of a concentration technique to the skin biopsies. Later more adults became bacillus-positive and a high proportion of those who were lepromin-negative became lepromin-positive. Of the total group of 162 persons, 60 developed recognisable physical signs of early leprosy.

Contacts of tuberculoid and lepromatous leprosy were next studied separately. Clinically and bacterially positive leprosy developed in 27 per cent of those in contact with the tuberculoid type and 39 per cent in those in contact with the lepromatous. An arbitrary division of leprosy patients into 'open' and 'closed' types therefore seems unjustifiable.

It is not possible to predict which of those contacts who show leprosy bacilli in their skin will develop leprosy which will escape it, so this can be called the 'silent phase'. In the histology of this early stage there is nothing special, except for the occasional finding of a histiocyte with one or two intact or fragmented acid-fast bacilli in the cytoplasm. Sometimes the histiocytic cytoplasm takes a granular or diffuse basic stain which does not decolourise with weak acids. Khanolkar has found this only in the early stages of leprosy and calls such cells 'fuchsinophil cells'. In the next phase there is a non-specific type of cellular response; this is the indeterminate phase. Later the cell response be-

comes typical of lepromatous, dimorphous, or tuberculoid leprosy.

In the histology of all these three types of bacilli seem to prefer to be found in the axoplasm of the cutaneous nerves and there is an inflammatory response which tends to be located in areas of the dermis which are richly supplied with nerve filaments, such as hair follicles, sweat and sebaceous glands, and erector pili muscles. The sensory cutaneous and the sympathetic fibres seem to be affected early and greatly, and show the most of later damage in all forms of the disease.

In lepromatous leprosy the bacilli gain access to the axoplasm of the preterminal axons of regenerating fibres. The electronmicroscope shows bacilli lying interspersed with mitochondria The bacilli seem to move towards the dorsal root ganglia and go no further. The axoplasm shows degenerative changes and looks wormeaten in ultra-thin sections, and bacilli with a lipoid covering are seen lying in the section. The myelin sheath also undergoes progressive degeneration. At intervals along the nerve fibre there are clumps of great multiplication of bacilli, which probably burst out in the endoneural and perineural spaces. Contemporaneous with the degenerative changes regenerating nerve fibres migrate along the collapsed Schwann tubes from the adjacent unaffected nerve fibres, and the Schwann cells convert into ribbonlike bands called 'Büngner's Cords'. The bacilli seem to be able to remain a long time in the Schwann cell cytoplasm unharmed. The bacilli which escape out of the nerve fibres are taken up by the endoneural cells and histiocytes, which pack closely into a sheath of lepra cells round the nerve fibres. The pressure of packed lepra cells and resulting ischaemia seems to be the main cause of disturbance in structure and function of the nerves.

In the dermis the early change in lepromatous leprosy is the appearance of collections of chronic inflammatory cells in strands or groups around nerve twigs and plexuses. The grouped cells form a richly vascular granulation tissue on a reticulum of very fine fibres. Most of the cells are histiocytes. In their cytoplasm the bacteria multiply and quickly come to be surrounded by a lipoid envelope which under the electron microscope appears as an opaque droplet. In this droplet clear zones appear which adjoin the bacteria. These clear zones fuse with the adjoining coverings of multiplying bacteria, and finally the whole cytoplasm appears foamy (the Virchow or Lepra Cell). The dermis in later stages of leprosy has large areas forming a continuous sheet of chronic inflammatory tissue with huge numbers of bacilli, and with lepra, mononuclear, and plasma cells.

In the dermis the early change in tuberculoid leprosy is the invasion of foci or mononuclear cells and histiocytes, usually located along the channels occupied by the neurovascular bundles. The histiocytes transform into epithelioid cells and occasional giant cells round a core of fine nerve twigs. By electronmicroscopy of ultrathin sections the cytoplasm of epithelioid cells is seen to contain a smooth reticulum and diffuse lipoid dust, and mitochondria increase greatly during the active and reactive phases of tuberculoid leprosy. The epithelioid cells rapidly engulf and destroy leprosy bacilli and other tissues such as collagen and nerve fibres which are in their area. The nerve fibre changes are characteristic; beginning with Wallerian degeneration they go on to necrosis. Throughout all stages there is a continuous attempt at regeneration of nerve fibres in adjacent unaffected areas of skin, consisting of a sprouting of fine neurofibrils.

In dimorphous leprosy the lesion shows mixed characters in the same or different lesions of the same subject, and is an intermediate response to the infection.

Khanolkar comments on the above findings. The leprosy infection is probably transmitted by skin contact, by repeated or even single contacts of the bare skin of a susceptible person with the skin of a lepromatous case, and even also dimorphous and reacting tuberculoid cases. It appears that the bacilli must reach the external surface of the body in sufficient numbers. Even after they survive in the host and grow in his tissues they may not produce the disease. It seems that they must multiply rapidly and have a certain degree of biological activity so that the responses and reactions of the host become recognisable as clinical leprosy. It is still not known how the leprosy bacilli introduce themselves into the axoplasm of nerve fibres in the skin. Nishiura thinks that it starts with the regenerating axon, whose terminal expansion actively phagocytises free-floating bacilli in the tissue fluids of the skin. The problem of the persistence of leprosy bacilli in the body for long periods of time, even after a long course of therapy, is probably due to their lodgement in Schwann cells, and the rapid multiplying and freeing of the bacilli in tissues outside the nerves must be influenced by general body conditions, such as puberty, pregnancy, intercurrent diseases, and unsuitable treatments. We still do not understand the factor or factors which determine the change of a histiocyte into an epithelioid or Virchow cell. For the last 2 years Khanolkar has cultivated an acid-fast mycobacterium identical with *M. leprae* from 4 different cases of leprosy and kept in growing in artificial media. Binford and Chatterjee have reported experiments in laboratory animals which begin to throw light on transmission. Khanolkar has found some promise in similar experiments on mice.

14. Drs. A. Paul Jayraj and D. Chowdhury gave their papers on Epithelial and Subepithelial Innervation in Lepromatous Leprosy. They applied the silver impregnation method to biopsy material from the skin of 20 advanced lepromatous cases, and found intact nerve fibres in the epidermal and subepidermal layer of lepromatous skin. It is not known whether these fibres are carrying impulses or not.

15. Dr. R. G. Cochrane read a paper on Immunity in Leprosy. He pointed out the difficulty of this subject. The strength of the lymphocytic response may be a measure of immunity in leprosy, and it may be used to assess the action of the lepromin test and of BCG vaccination. One injection of BCG may not produce an

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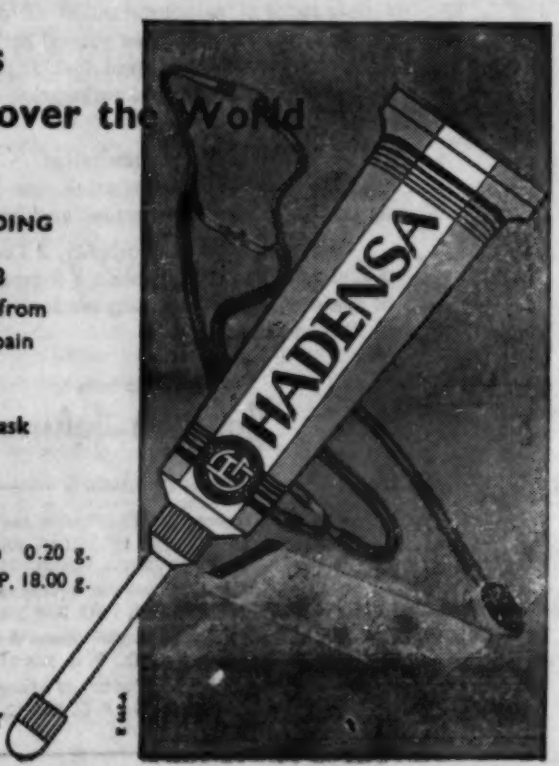

effective immunity and perhaps it will need to be given repeatedly. Further it is by no means certain whether the immune response, as indicated by the appearance of tissue allergy, is determined by the type of the disease or whether the allergic response determines the type of disease.

The lepromin reaction is usually regarded as merely an indication of the stage of immunity in the tissues. Dr. Cochrane expounded the concept of a conflict between the bacillus and the tissues, on the outcome of which either lepromatous or tuberculoid leprosy emerges. Thus established, tuberculoid leprosy is that form of the disease in which the tissues finally gain the upper hand. His concept of dimorphous leprosy relates the clinical and histological signs of leprosy to the individual immunity state. He thinks that erythema nodosum leprosum is a bacterial allergy and is produced when the bacilli are undergoing great changes in morphology, and that progressive lepra reaction has no direct bearing on immunity but is simply a biochemical reaction to circulating antibodies, as is indicated by the mobilisation of plasma cells and the marked reversal of the serum globulin/albumin ratio in the blood.

16. Drs. B. M. Braganca and K. Prabhakaran reported on their studies of Some Aspects of the Metabolism of *M. leprae*. They wished to explore the enzyme metabolism of *M. leprae* obtained from lepromatous nodules, first separating the bacilli from the nodular tissue by a method which did not inactivate the enzymes. They used differential centrifugising and used aqueous solvents known not to denature proteins and enzymes. The final fractions were found free of tissue debris. The separated organisms were subjected to metabolic studies of two kinds, one the nature of the enzyme pattern by which the bacilli metabolise various substances to obtain the required energy, the other the nature of the enzymes involved in the metabolism of amino-acids. It was found that human leprosy bacilli contain several of the oxidative enzymes, namely cytochrome oxidase, succinic oxidase, cytochrome reductase, lactic dehydrogenase linked to DPN, and pyruvic oxidising enzymes. In general these indicate that the bacilli can obtain energy for cellular activity by the aerobic oxidation of nutrients such as glucose, lactate, and pyruvate. Unless the bacilli were crushed the aerobic metabolism could not be significantly demonstrated *in vitro*. This indicates that the lipoidal capsule around the mycobacteria may affect the accessibility of the various substances tested to the enzyme centres in the cell. As regards amino-acid metabolism the work is at an early stage but it was found that both glutamic acid and tyrosine are actively metabolised by the separated organisms.

17. Dr. K. Yanagisawa of Japan reported on his Studies on the Potency Test of Dharmendra Antigen. The potency of lepromin has previously been assayed mainly by the enumeration of leprosy bacilli of the antigen. However by analogy with similar studies on tuberculin and BCG reactions it seemed worthwhile estimating the potency of Dharmendra antigen by the grade of reaction itself rather than by enumeration of the bacilli. He carried out experiments on 3 lines (a) Leprosy bacilli obtained by trypsinising human lepromas were applied to sensitise guinea pigs; (b) potency of different samples of Dharmendra antigen was compared in guinea pigs sensitised with leprosy and tubercle bacilli; (c) potency of different samples of Dharmendra antigen was compared as between leprosy patients and guinea pigs sensitised with tubercle bacilli. The results all tended to show that assay of potency of Dharmendra antigen can be performed with guinea pigs sensitised to tubercle bacilli.

18. Drs. B. B. Gokhale and B. B. Desai gave a paper on Cholinesterase Activity in Leprosy. The physiological function of this enzyme in the blood stream is not yet clearly understood. It is possible that it is a mere barrier to destroy and acetylcholine which leaks out into the blood stream; but it is located in high concentration in the neuronal surface and its main function is to hydrolyse acetylcholine which is directly associated with the nerve action potential. This hydrolysis of acetylcholine is necessary for the return of the nerve to normal, and any condition that reduces or inhibits it will delay the return of the nerve to normal. The organic phosphorus insecticides have been found to inhibit cholinesterase by about 80 per cent in some cases and typical neurological symptoms resulted in such cases. Therefore it was thought worthwhile to study the enzymatic activity of serum samples in normal cases and leprosy cases, and a statistically significant lowering of the activity was observed in the leprosy patients. This now provides a basis for a planned study in comparable groups of leprosy in various stages.

19. Dr. Y. K. Subrahmanyam described the Draft Scheme for the Third Five-Year Plan on Leprosy. It is estimated that there are about 2 million cases of leprosy in India, which is a moderate estimate. Working on the basis of this estimate and on an incidence of 20 per thousand in endemic areas (the incidence varies from 10 to 60 per thousand) the population to be covered would be 100 million. So far the Government of India has established 72 units and aims at a target of 100 units by the end of the 2nd Five-Year Plan now in progress. In the Third Plan period a further 150 new control units would be needed to achieve full coverage. Two Rehabilitation Centres are planned, one in the southern and one in the northern zone, for each of which more detailed planning is required, and for each of which a sum of Rs. 25 lakhs (£187,500) is expected to be needed. Training centres are very important and these will be provided by the State Governments, with a probable subsidy from the Central Government. About 4,600 paramedical and 1,900 social workers will be needed to be trained in the Third Plan Period. An All-India Training Centre in Physiotherapy and Orthopaedic Surgery is being discussed, in consultation with Dr. Paul Brand of Vellore Christian Medical College. A grant of Rs. 25 lakhs (£187,050) is required for this purpose. For the purpose of the All-India effort to detect and treat 2 million cases of leprosy, each State Government will need a good leprosy organisation. The finance of the Third Plan is visualised at Rs. 1,700 lakhs (£12,750,000).

20. Dr. H. K. Lall gave a paper on the Control of Leprosy. He reviewed the history of leprosy control in the past 40 years and warned that future control will not be too easy in spite of the possession of the sulphones. These should be used in mass treatment campaigns, with intensive surveys to detect early cases, and with education and propaganda not getting ahead of treatment. In propaganda we would be wrong to say leprosy is not at all infectious but try to keep away from extremes and on the right lines as the truth is revealed. Nor should we denounce segregation, as it has some value, notably the idea of night segregation. It is very important to have the right type of personnel, both medical and auxiliary. For the time being it is best to have a separate leprosy cadre.

21. Shri M. B. Diwan also gave a paper on the Control of Leprosy. He said that India can control leprosy in a reasonable period provided that we adopt a sane, practical, and scientific attitude towards the problem and obtain personnel who are devoted, intelligent, and properly trained. Also the programme should be carried out on a broad front without a break, with open mind to adopt all possible improvements, and with periodic assessments of progress. The sulphone treatment has great advantages, but it is neither specific nor bactericidal, and it can fail so that relapses occur and it is still not certain that it is of value for prophylaxis. Control by treatment alone, with isolation abandoned, is an attitude not scientific. However inconvenient or expensive, we cannot dispense with isolation. In a sympathetic prepared atmosphere voluntary isolation is quite practicable. There is still ample scope for the creation of new leprosy institutions with their special contributions, and the leprosy control scheme should use all good measures. More emphasis on educative programmes is much needed. Even among medical men and the educated classes prejudice against leprosy exists, and it should be broken down. Non-medical auxiliaries do most of the work in the present control schemes, and their selection and training needs to be improved. Voluntary associations should be welcome to join in the leprosy campaign.

22. Mr. W. Bailey gave a paper on A Work of Reconstruction. He defined rehabilitation and to the medical, social, and economic aspects he added the spiritual, for our ministry is to the whole man. So far there is a gulf between occupation and rehabilitation therapy, and these two should be brought together. There are four main groups of ex-patients those who are incapable of work, those who can be taught to work in spite of their deformities, those who need training for a new job, and those who need help in finding a suitable job. He calculates that there may be about half a million leprosy ex-patients in India who cannot do economic work; some 855,000 capable of open competitive work, and some 165,000 capable of doing profitable sheltered jobs. Rehabilitation should begin to be thought of and planned right from the beginning of the patient's treatment, and the aim should be a co-operative effort between surgeon, social worker, business and industry. The leprosy patient should never need to become a beggar. He can become a useful citizen again.

23. Dr. I. Santra gave a paper on Social Aspects Including Rehabilitation. He said that social service should be based on religion, and the impulse to leprosy work in India came from religious people and was approved by a saint (Mahatma Gandhi). In India there are at least 1,500,000 leprosy cases, out of which 300,000 may be infectious, and many are blind or deformed. The people should be educated to recognise the disease and to know about its curability and degree of infectivity. Cured cases must be received back into the community and we have to prepare both the patient and the community for that. Children of infective patients should be separated and given proper training to fit them for their own life. The provision of better food for the masses is very important. In India there is a greater incidence of leprosy where the food level is low. Rehabilitation should be a part of the work of every leprosy scheme.

24. Dr. S. D. Gokhale dealt with Social Aspects of Institutional Treatment. There is need of careful study of the family structure and social relationship among the leprosy patients. Many of them beg, not perhaps of their own choice, but because they have no home and no other means of subsistence. It is mostly disfigurement which drives a leprosy case out of the community. For those with major disfigurement the social worker has a heavy job, for they need shelter, occupation, and good food. A leprosy beggar however may not want to be rehabilitated, and this problem needs special attention, which the author thought calls for special institutions, in which they can be handled with sympathy and understanding, and psychiatric therapy will be called for, as well as good counsel. There should be careful selection of vocations and jobs. The children of leprosy patients should be cared for, those infected as well as those free of the disease.

25. Shri H. Shamrau gave a paper on Leprosy Control. In leprosy surveys it is best to start with treatment and propaganda and then deepen and widen the survey work. There should be an All-India Leprosy Board at Delhi with branches in each State. Each leprosy scheme centre should have a medical officer, pharmacist, laboratory technician, and 8 to 10 paramedical workers, social workers, peons, sweepers, and a van driver, and 2 clerks for the office. Each centre needs a well-equipped mobile medical van, bicycles, and staff quarters. The centre should be placed in or near the district headquarters. Many treatment centres should be opened to which no patient should be made to walk more than 3 miles. Domiciliary treatment should be used as necessary, and the work of the auxiliary staff should be supervised by the medical officer. Advice on segregation and prevention should be given, and education of the public. Work by the patients should be encouraged and guided and rehabilitation schemes set going.

26. Dr. M. Masih gave a paper on An Effective Approach to the Leprosy Problem. The old dread of leprosy is yielding to advancing knowledge of its mild

infectivity and curability, and it could easily be treated in general hospitals and dispensaries. It might be possible to attach special wards to these, but doctors should be adequately trained in all medical schools. Local bodies should take an interest in the leprosy campaign and share in it, and more emphasis should be laid on rehabilitation. More centres are needed for this, whether in older leprosy homes or specially established ones.

27. Shri T. N. Jagadisan spoke on The Principles and Practice of Rehabilitation in Leprosy. He said there is a great rise in the interest in this and gave a list of the existing literature, and described the many institutions in India which are now actively engaged in rehabilitation work. He warned against accepting agriculture in every case as the ideal work for the leprosy patient: in many cases it is too heavy or too traumatic. Rehabilitation should be suited to every patient, and physiotherapy, surgical corrections, psychotherapy, social integration, public propaganda and persuasion, and preventive medicine and individual care enter into the whole task. It is a huge task but we should not despair, but learn from the domestic mouse "which bites away a huge bulk bit by bit."

28. Dr. P. Sen read a paper on Social Factors Demand Adequate Attention. Since May 1958, he had studied the social aspects of leprosy to provide a basis for a mass educational programme for Savda, East Khandesh. He soon found there was need for training in social aspects to be given to the field workers and medical officers of the national leprosy control programme. These social factors hinder prevention and treatment and even influence the causation of leprosy. The environmental social factors which influence causation are poverty, poor housing, starvation, squalor, ignorance of the rules of health, and community prejudices. Even emotional disturbances may react adversely on leprosy. The fear and hostility and apathy of the other members of society also react adversely. As for the victim of leprosy, he is denied the means of livelihood, denied family and social life, even denied hospital facilities for the treatment of other diseases. He is often denied facilities for rehabilitation when the disease is arrested. Even the law is against him, for by the Hindu Marriage Act of 1955 leprosy of 3 years' duration is a cause for divorce.

Patients naturally react to all this by being reluctant to accept the diagnosis of the disease, by concealment of the disease, by depression and drift towards suicide, by loss of mental and moral fibre, by irregularity in taking treatment, by forced reliance on begging or private charity. These things tend to make the disease worse and delay cure.

The patient's family also suffers, especially from loss of the wage-earner's income, and from the discrimination against the children in education and marriage.

All these things come back on society in economic and social loss, and the ravages of the social stigma are as much as the disease itself. As much study and effort to counteract these social factors will be needed as studies in therapy and surgical correction of the disease.

29. Miss T. Surty gave a paper on Education. She gave an account of organised educational work in leprosy carried out in Greater Bombay. The plan of work includes posters for hospitals, clinics, bus stands, schools and colleges, railway stations, dispensaries, and exhibitions. Written material for publication comprised material for newspapers and magazines, medical journals, and goodwill advertisements. Folders, leaflets, and booklets were prepared for patients and relatives, schools and colleges, and exhibitions. Lectures, seminars, and talks were arranged for doctors and students and welfare and other organisations. Films are made for schools and colleges, cinemas, mills and factories, and for showing in endemic areas. Radio talks are obtained, and models, charts, and posters made for stalls in exhibitions. Three types of film documentaries are aimed at: (a) for students, a film showing a variety of early lesions and precautionary measures; (b) for cinemas, a film with a story with a human appeal, without depicting the advanced type of leprosy; (c) for the masses in endemic urban areas, a film showing early lesions leading to advanced stages, and the results of treatment, and precautionary measures. It is difficult to get the full cooperation of the press, as editors are more interested in the spectacular than the educational. One should not overlook the aesthetic appeal of attractive colours in posters and leaflets.

30. Drs. P. Sen and I. O. Deshmukh gave a paper on An Epidemiological Survey of Social Behaviour Towards Leprosy. From almost all centres in the national leprosy campaign comes the report that a large number of patients do not attend well for taking the sulphone therapy, and remain indifferent to treatment. Hence the Hind Kusht Nivaran Sangh undertook an investigation at Savda through a special medical social scientist, Dr. P. Sen. He prepared 2 questionnaires, one for the patients and one for the general population, and it was found that most of the patients and the public were totally ignorant of the elementary scientific concepts of leprosy that they have an elaborate set of ideas and beliefs about leprosy inherited from the past which are utterly useless in active control of leprosy, that there is excessive ostracism in social behaviour towards leprosy patients. In the beginning of the work at Savda the subsidiary clinics of the Centre had to be carried on at the roadsides or in the fields as village leaders would not permit them near human habitations. People in general and the village leaders and social workers avoided any contact with the workers of the Centre for fear of having to assist in case detection. People got annoyed if the workers visited their homes even on a courtesy call, lest their neighbours suspect they had anyone suffering from leprosy. The attitude of the medical practitioners in the area was not helpful. Since the social study was begun, there has been much improvement in the general atmosphere, with much cooperation, and the clinics have been rescued from the roadside and fields and brought in to dispensaries and offices. It shows how essential are publicity and health education.

STUDENTS AND TEACHERS*

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Bangalore

Although medicine has been taught and practised in India from time immemorial, the instruction in Modern Medicine is of comparatively recent origin. This movement started in the early part of the 19th century in Bengal. At that time instruction in Ayurvedic and Unani systems of medicine was imparted in Calcutta in the Sanskrit College and the Madrasa respectively. It was in 1822 that the first medical school was started in Calcutta. A similar school was started in Bombay in 1826 and in Madras in 1827. The school in Bombay however, remained open for 6 years only, and was abolished in 1832. In 1833, Lord William Bentinck appointed a Committee for improving the medical school in Calcutta.

The deliberations of this Committee had a most profound effect on the future course of medical education in India. According to its recommendations, the Calcutta Medical School was abolished, as well as the medical classes in the Sanskrit College and the Madrasa. A new medical college was established in Calcutta in 1835. This date 1835 is very important in the history of medical education in India, for it was in that year, that an institution was started, which imparted medical education of the standard comparable with that prevailing in Europe at the time. It is recorded, that dissection, which in the days of the original medical school was performed on the sheep was undertaken in the new medical college on the human body for the first time on 10th January 1836. In 1839, the first students passed out from this college. In 1846, the examining bodies in England gave their first recognition to the course of education provided at Calcutta as qualifying for their examinations.

In Madras a medical school was established in 1827. It was of the same standard as the original medical school established in Calcutta in 1822. In 1847, the Madras school was raised to the standard of a medical college but its name remained unaltered till 1850. The first batch of students qualified in 1852.

In Bombay the medical school started in 1826, was abolished in 1832. Sir Robert Grant, the Governor of Bombay, directed his attention in 1836 to the desirability of starting a medical college like the one in Calcutta. He consulted the Medical and Physical Society of Bombay for its views on the matter. This was probably the first medical society of its kind in India. It strongly recommended the proposal, and Sir Robert Grant strongly supported it, and it was finally accepted by the Government of India, whose headquarters were in Calcutta at the time. Unfortunately, before the news of its acceptance reached Bombay, Sir Robert Grant died. Subsequently, with the help of public donations and Government support, a medical college was established in Bombay in 1845. It was named Grant Medical College in memory of Sir Robert Grant, to whose initiative the institution owed its existence. This is the college which I had the privilege to serve for 21 years, as Professor, Dean and Principal. The hospital attached to this college was donated partly by Sir Jamsetji Jeejeebhoy and partly by government, and it was named after the former as the J. J. Hospital. Subsequently other hospitals grew up in its vicinity. This is briefly the history of the three oldest medical colleges in India, where instruction in Modern Medicine was first started. With the establishment of the universities in Calcutta, Madras and Bombay in 1857 they were affiliated to them. Subsequently King Edward Medical College was established in Lahore in 1860 so that by the close of the 19th century there were 4 medical colleges in the country of the university standard.

Some other colleges of a similar kind were established after the turn of the century, such as King George Medical College, Lucknow in 1912, Lady Hardinge Medical College, Delhi in 1916, Medical College, Vizagapatnam in 1923, King Edward Medical College, Patna in 1925, Seth Govardhandas Sunderdas Medical College in Bombay in 1928, etc. In recent years, their number has increased rather rapidly, so that we have about 58 medical colleges in the country now, amongst whom the Christian Medical College at Vellore occupies a place of great distinction.

It is up to us to see, that the standard of instruction in all these colleges and in those which are likely to be started in the future is maintained at a very high level, so that our graduates are well trained, and can give medical relief of a high order to our people.

Further, medicine is both an art and a science. A proper study of it also requires a close personal contact between the teacher and the student. The teacher has an important duty to perform in this respect. There are certain things like quickness of perception, rapid collection and sorting out of a series of impressions, the exercise of intuition and tact, the skill of obtaining history, making diagnosis and prescribing treatment, a sympathetic approach to the patient, correct professional conduct and so on, which can best be learnt when a student closely watches his teacher at the bed-side of the patient. Such things cannot be learnt from any text book. Apart from the scientific knowledge that a teacher may impart to his pupil, there is much more that he can give by personal contact, informal talks and by his own behaviour. Example is better than precept. Thus a great responsibility rests on the shoulders of all teachers of medicine in our medical colleges. I am sure, they are aware of it and carry out their duties in a manner most beneficial to their students. I am gland, that in this college the contact between the teachers and students exists as it should be and in this respect it can serve as an object lesson to others.

Throughout the whole course of instruction special emphasis should be laid on the ethics of the medical profession and their due observance in daily practice. The tenets of the Hippocratic Oath which I hope you have all read, should be deeply instilled in the minds of the students and they should be taught to practise medicine with a spirit of service.

According to Charak, we find that in ancient India when the student after the conclusion of his studies,

* From an address delivered at the Graduation Ceremony of the Christian Medical College, Vellore on 5-9-60.

was about to embark on his medical career, he had to undergo 'Samavartana Ceremony' and take an oath, which in substance was very much like the Oath of Hippocrates. There is no doubt, that there was contact between India and Greece in the old days, and ideas filtered from one to the other. The Oath of Hippocrates is combined wisdom of the East and the West.

The calling of medicine demands a long and an arduous period of training and preparation, and medical education is the best type of liberal education that one can have. The medical course consists of a wide range of subjects and a number of stages which a student has to pass before he can be vested with the responsibility of alleviating human suffering. This has to be necessarily so, owing to the limitations of the human mind which can grasp the whole only by gaining a knowledge of the constituent parts. The division of the course into a number of parts should not convey the idea that the individual parts consist of watertight compartments. All parts are intimately interrelated. My professor of medicine, Sir Clifford Allbutt, at Cambridge used to say that several stages of medical learning are not a series of isolated reservoirs but a series of tributaries which flow into one large gathering stream. It is the task of the universities and medical colleges to so arrange the course of instruction that one stage leads logically to another and gaps between them, which may be apparent, are suitably bridged. This integration of medical knowledge is essential at all times but is specially so these days when owing to rapid advancement of medical knowledge specialisation has become necessary and there is danger that medicine may be split into small fragments. Specialisation is a natural phenomenon and has come to stay, but we must take care that integration keeps pace with specialisation.

It should be also remembered that medical education is a life long business. It does not end with the passing of the final MBBS examination and obtaining the medical degrees or diplomas. A physician has to keep on educating himself till the end of his days. A habit of self-education should be acquired from the early days in the college. Later on, we receive this education from our patients, medical journals, medical books and medical societies. Facilities should also exist for refresher courses when we can get free for a time from the occupation, distractions and worries of normal life and devote ourselves to reflection and study.

Medicine is universal in its outlook. It knows no political, racial or linguistic boundaries and no barriers of space. All practitioners of medicine belong to one universal brotherhood, whose one aim is to alleviate human suffering and thus promote human happiness. Medicine is becoming more and more international. On account of rapid communications different nations are in great contact with each other than ever before, and thus we have become more conscious of prevailing health conditions in different parts of the world. We compare health conditions in one country with those in another, resulting in an increasing desire to improve these conditions, where they are unsatisfactory. Thus various international bodies such as the WHO, UNESCO, UNICEF, etc., have come into being and are doing very useful work. In India, it is painful to note that the health conditions have been very unsatisfactory. The morbidity and mortality rates are higher in this country than in any Western country. We are faced with multiplicity of preventable diseases which should be prevented. The standard of nutrition is low, water supplies and environmental hygiene still need to be greatly improved. Although much good work has been done and there are definite signs of improvement, in health matters, we must realise, that a great deal of work is still to be done and there is no room for complacency here.

We in India are fortunate in possessing a fine heritage, a heritage which throws great responsibilities on our shoulders. Thomas Fuller once remarked, that it is the bounden duty of every one to better his heritage of birth or fortune and where the father found glass and made crystal he urges the son to find crystal and make pearl out of it. We are lucky that our culture is a composite one and our medical heritage very rich and diverse and a happy blend of the ancient and modern modes of thought. It includes ancient Hindu, Buddhist, Egyptian, Greek, Roman, Arabian and Persian contributions, to medicine, as well as its modern development since the days of the Renaissance with which we have been connected owing to our contact with the Nations from the West. If Charak and Susruta, Hippocrates and Galen, Rhazes and Avicenna, Vesalius and Harvey, Pasteur and Lister were alive today, I am sure they would say, that we should continue to make contributions to the knowledge of medicine and that of the crystal which they have left to us, we should make diamond and pearl.

We must not forget to imbibe all the lofty ideals comprising devotion to duty, steadfastness of purpose, charity, compassion and spirit of service that they have handed down to us apart from the knowledge of diseased conditions and their treatment and prevention. The ethical ideals which inspired them are there to inspire us today. These ideals, though old, are ever fresh and new; for the truths they embody are good for all eternity, as for instance, the Oath of Hippocrates and of Charaka.

Today medicine has reached a stage after a period of evolution when its scope is more comprehensive than ever before. It is not merely an art of prescribing pills, powders, mixtures or injections, or even performing a surgical operation when necessary. These things, of course, are necessary for they are the essential part of our armamentarium. But the aim of medicine now is to offer medical relief on the widest possible scale to every citizen in the land, both domiciliary and institutional, in which all the facilities required for the treatment and prevention of disease as well as for the promotion of positive health are provided for all, irrespective of their ability to pay for them. We also now study disease and ill health in relation to social and physical environment. In order to study the scope of medicine in any country, we must study its social, cultural, economic, scientific and historical aspects. It includes the practice, teaching and research in medicine in all its roots and branches on the widest possible scale.

NOTES AND NEWS

WMA Elects Officers

At its XIVth General Assembly held in West Berlin, Germany, September 15-22, 1960, the World Medical Association elected the following officers :

President, 1960-61—Dr. Paul Eckel, Germany.

President Elect, 1960-61—Dr. Antonio Moniz Aragao, Brazil.

Members of Council, 1960-63—Dr. J. G. Hunter, Australia; Dr. L. W. Larson, U.S.A.; Dr. Antonio Spinelli, Italy; Dr. Hector Rodriguez H., Chile.

Secretary General, 1961—Dr. Heinz Lord.

The Council of the World Medical Association elected the following officers for the coming year :

Chairman of Council : Dr. Gunnar Gundersen, U.S.A.

Vice-Chairman of Council : Dr. Felix Worre, Luxembourg.

Executive Editor, *World Medical Journal*—Dr. Stanley S. B. Gilder, U.K. Associate Editor—Dr. J. R. Gosset, France.

The officers of Committees for 1960-1961 include :

International Liaison—Dr. Jean Maystre, Switzerland.

Medical Education—Dr. L. W. Larson, U.S.A.

Medical Ethics—Dr. Hugh Clegg, U.K.

Planning and Finance—Dr. T. C. Routley (Canada), Chairman; Dr. L. R. Mallen (Australia), Vice-Chairman.

Socio-Medical Affairs—Dr. Felix Worre (Luxembourg), Chairman; Dr. Rolf Schlogell (Germany), Secretary.

Liaison Officers appointed—Dr. Jean Maystre, Switzerland; Dr. Charles Jacobsen—Denmark.

The following regional secretaries were appointed :

Asian Area : Dr. Munawar Ali, Pakistan—in collaboration with Dr. A. P. Mittra, Council Member for India.

Australia and Indonesia : Dr. J. G. Hunter—Australia.

Africa : Member Associations being requested to submit nominations to Council.

Europe : Dr. M. Poumailloux, France.

Latin America : Dr. Hector Rodriguez H., Chile.

North Pacific : Dr. Y. Minamizaki, Japan.

International Medical Conference

A new International Medical Conference called by the Medical Commission of the Federation Internationale Des Resistants will be held in Liege (Belgium) from 17th-19th March 1961. It will deal particularly with the following methods of treating premature ageing and progressive asthenia : 1. Psycho- and corticosomatic treatment, relaxation and sleep. 2. Vascular therapy against atherosclerosis. 3. Correction of certain endocrine deficiencies and metabolic disturbances. 4. Therapy of general stimulation (histotherapy, reticulocytotoxic serums) as well as new methods still being tested (cellular and endocellular therapy, long term novocaine treatment). 5. Geriatric hygiene and diet.

The introductory papers will be given by Dr. Louis Fichez, Secretary of the Medical Commission of the F.I.R. and Head Physician of the rehabilitation centre "Jean Moulin". A number of prominent medical scientists from several countries have already agreed to participate at the conference in Liege. All enquiries concerning the participation should be addressed to the Medical Commission of the FIR, Vienna II, Castellezgasse, 35.

Nobel Prize for Medicine

Professor Peter Brian Medawar, Jodrell Professor of Zoology and Comparative Anatomy at University College, London, has been awarded the Nobel Prize for medicine. Professor Medawar shares the prize with Dr. Frank Macfarlane Burnet of Australia. Their citation said that they were awarded the £14,000 prize for their discovery of acquired immunological tolerance.

Medical Women's International Association

Medical Women's International Association have already won their battle for recognition in the field of medicine. Today a woman doctor can attain the rank of senior physician in hospital. Also the majority of women doctors work independently and practise on their own.

The proportion of female to male physician is highest in Finland, followed by Germany and the Netherlands. The figures are : Finland 23 per cent, Germany 20 per cent, Netherlands 15 per cent, Sweden 12·7 per cent, France 8 per cent, and the U.S. 6 per cent.

New Antimalaria Tablet

A new antimalaria pill, which promises to be the most effective antimalaria drug combination developed so far, will soon be given to U.S. troops in Korea, the Department of the Army announced on 10-10-60.

Resulting from Army-supported studies conducted by Dr. Alving of the University of Chicago, the new tablet combines two drugs used separately in the past for malaria prevention—chloroquine and primaquine, both developed since World War II. Dr. Alving's investigations have been conducted under the contract with the Army Medical Research and Development Command, Washington, D.C.

Since 1951, chloroquine and primaquine have complemented each other in malaria treatment although they have not previously been taken together in tablet form. New treatment procedure for military personnel in malarious areas will be the administration of one of the new tablets each week.

The new pill has as yet been given no name.

Smallpox Eradication Programme

The Smallpox Pilot Projects Committee which met at New Delhi on 7-10-60 under the chairmanship of Shri V. K. B. Pillai noted that pilot projects had started working in ten States and those in the remaining would be functioning soon and that so far about 1,412,200 persons had been vaccinated. Under this programme 17 pilot projects will be set up to cover a population of 23,700,000 by March 1961.

The Committee discussed the availability of lymph vaccine for the pilot projects and recorded that the supply position was satisfactory. The Union Ministry of Health has sanctioned grants totalling about Rs. 16

lakhs to various vaccine making centres for stepping up production to meet the requirements of the Eradication Programme.

Fighting Tuberculosis among Displaced Persons

Seven T.B. clinics are being set up in West Bengal with financial assistance amounting to over Rs. 11 lakhs from the Union Ministry of Rehabilitation. These clinics will further extend facilities for treatment of tuberculosis among displaced persons from East Pakistan settled in the State.

In addition to these clinics, nearly 600 beds have been reserved for tuberculosis patients among displaced persons in the State. Those awaiting hospitalisation are given financial assistance, besides other facilities.

The Union Government have already spent nearly Rs. 1·5 crores in the State to fight tuberculosis among displaced persons from East Pakistan.

Grants totalling Rs. 14·76 lakhs have also been given to non-official hospitals and institutions for the expansion of their existing capacity and the purchase of equipment to provide facilities for the treatment of displaced T.B. patients.

Proposal for Health Cess

Some of the State Governments are opposed to the levy of a health cess to augment their resources for expanding the existing medical facilities in the country.

In view of the paucity of resources, some States find it difficult to open new hospitals and expand the existing ones. To supplement their finances, various suggestions such as the introduction of a hospital lottery, issue of special postal stamps or the imposition of a small health cess were considered by the Central Council of Health. But the first two suggestions did not meet the approval of the Union Finance Ministry. The levy of a health cess also has not been favoured by the Governments of Assam, West Bengal, Bihar, Madhya Pradesh and Himachal Pradesh on the ground that the present time is not opportune for the imposition of such a cess. But the Governments of Andhra Pradesh and Mysore have welcomed it. In fact, the Mysore Government has informed the Centre that it had already prepared a draft bill for levying such a cess. The Governments of Madras, Orissa, Kerala, Punjab and Jammu and Kashmir have not expressed any opinion on the matter.

Nutritional Survey

In order to study the dietary habits and to assess the nutritional status of representative segments of the population, the Department of Nutrition of the Government of Maharashtra has undertaken an extensive survey of the Nagpada area of Greater Bombay.

In collaboration with the Social Service Department of Y.M.C.A., about 50 families residing in and around the Undria Street, selected at random, were covered during the quarter April-June last. The dietetic study included the actual weighing of raw foodstuffs twice a day for a week, the recording of foods consumed by mothers, and examining the weaning habits of infants. At the end of the survey, the individual members of the families were clinically examined.

Similar surveys have already been carried out amongst the lower middle class families in the Girgaum area and amongst the industrial workers in the Kurla area.

Mass Control of Trachoma and Associated Infections

Following the trachoma pilot project activities (1956-59) the Government of India assisted by the WHO and UNICEF will be planning to launch mass campaign against trachoma and/or associated infections in the northern and north-western parts of India where the disease is heavily endemic and is the biggest single cause of preventible blindness. To lessen the blinding complications of the disease, chief reliance has been placed on the periodical prophylactic and therapeutic use of some broad-spectrum antibiotic eye ointments or drops for the control of trachoma and/or associated infections.

The dramatic effects of the tetracycline group of drugs used for treating the sore eyes are well known. The whole success of the control programme will rest on the cheap and easy availability of such a drug in all the villages of heavily endemic regions.

It is interesting to note, that for the last few years the Government of Morocco, have made available cheap aureomycin eye ointment (1 per cent in 5 g. tubes) in every village tobacco shop all over the country. The Government do not subsidise any thing towards its cost. Two pharmaceutical firms in France (Specia and Chibret) get aureomycin powder in bulk from the U.S.A., make the ointment and then sell it to the Moroccoan Government at 25 cents equivalent to about 30 nP.

Considering the huge quantities of antibiotic ointments or drops which will be needed in India for many years to come, some of our pharmaceutical firms in collaboration with the Government agencies concerned may like to help our struggling villagers, in the manner the Moroccoan Government have done.

Shortage of Doctors in Madhya Pradesh

The question of raising the age limit of retirement of doctors to 58 is being considered in this State as one of the steps to relieve the shortage of doctors. There are nearly 500 dispensaries in rural and semi-rural areas of Madhya Pradesh which are without doctors.

The scheme of subsidising private medical practitioners to induce them to settle and practise in rural areas which was tried for some time is considered a 'failure' by the Director of Health Services, Dr. G. L. Sharma, who has suggested that they must try giving doctors rural allowance.

The Estimate Committee has, however, suggested the formation of a medical pool of private practitioners and Government doctors to attend to the needs of rural areas.

Apart from raising the age of retirement which has been recommended by the Indian Medical Council, the State Government are considering the question of the revival of the L.M.P. course recognition for service in rural areas. Other steps under contemplation include compulsory medical service for some period for all doctors in rural areas, provision of housing facilities to doctors and contract system of employment to doctors irrespective of age.

New Building for Topiwala National Medical College

The Rs. 30-lakh new building of the Topiwala National Medical College was inaugurated by Dr. S. Radhakrishnan, the Vice-President, in Bombay on 24-10-60. The modern, five-storey building will enable the college to admit 100 students every year.

Speaking on the occasion, Dr. Radhakrishnan called for a 'spiritual outlook' in man's life. Mental satisfaction, physical well-being and physical comfort, these make a person healthy, he added.

Dr. Radhakrishnan said that medical facilities had improved considerably in the country since the attainment of independence. In Bombay, he said, he was told that after the independence, accommodation for patients and facilities for medical treatment had nearly doubled. Yet much had to be done to meet the growing medical needs of the people.

REVIEWS

National Formulary of India—Compiled by the National Formulary Committee, 1960; Government of India, Ministry of Health, New Delhi; 6¼"×4"; pp. 325; 1 text figure; price not mentioned.

In November 1956 the Government of India constituted the National Formulary Committee consisting of nine members for the compilation of a formulary. The Committee constituted 12 specialists sub-committees. In the light of replies received to a questionnaire the list of preparations to be included in the formulary was drawn up. The monographs on the preparations were prepared by the sub-committees and were finalised by the main Committee.

In the preparation of the formulary the Indian, the British and the U. S. Pharmacopoeias, the British Pharmaceutical Codex, the British National Formulary, the U.S. National Formulary and several hospital formularies (both Indian and foreign) have been consulted. Periodic revision of the formulary has also been contemplated. It is hoped that the Formulary will provide a reasonably complete assortment of essential drugs and their formulations.

The pharmacological actions of and therapeutic notes on groups of drugs have been provided. The dosage of drugs has been given in the metric system. A conversion table has been included in the appendix. There is a separate paediatric section. There are chapters on the treatment of poisoning, and diagnostic agents. The average values of body measurements, composition of body fluids, etc., are also given in the appendices. An important feature is the listing of proprietary and trade names with their equivalents. There is a fairly comprehensive index of 58 pages. The book is recommended to general practitioners.

J. DHAR.

The Condom as a Contraceptive—By Christopher Tietze, M.D., 1960. National Committee on Maternal Health Inc., New York; 6"×9¼"; pp. 44; price not mentioned.

The 'condom' is an old and widely employed method of contraception. In the foreword, Dr. Louis M. Hellman of the State University of New York recommends its revival to solve today's population problem, for it is a good, thoroughly tested and comparatively cheap product, suitable for mass use.

Dr. Tietze deals with the subject in a thorough manner, describing its history, manufacture, quality control, testing, production and sales, population surveys, acceptance, effectiveness and clinical considerations. His analysis should focus attention on this tried and effective method of birth control. The author has pointed out that the rate of change to other methods tends to be lower for the condom than for other contraceptives. To married couples the condom offers greater protection against unwanted pregnancy than most of the other contraceptive methods employed by the same group of couples. It is suggested that the condom may offer a highly acceptable, effective, comparatively cheap and practical method of contraception in many areas of the world. This little volume deserves publicity among doctors and members of the family planning associations.

J. DHAR

Increase Your Sexual Efficiency—Edited by R. Swaroop, M.B.B.S. 1960; Madhuri Publishers, Lucknow; 4¾"×7¼"; pp. 101, 12 figures; Rs. 3·50 nP.

This handbook on common disorders of sexual efficiency deals with ejaculatio praecox, frigidity in women, technique of love, "self-relief", causes and management of sexual weakness, sex hygiene, exercises for keeping one fit, and sex in middle and old age. This book is written in a simple and non-technical language which will appeal to the layman for whom it is specially meant.

J. DHAR

All That is Strange in Sex—By George Ryley Scott, F.Z.S., F.PH.S., F.R.A.I., edited by R. Swaroop, M.B.B.S. 1960, Madhuri Publishers, Lucknow; 4¾"×7¼"; pp. 102, 4 figures; Rs. 3·50 nP.

This book is a concise and cheap edition of *Scott's Encyclopaedia of Sex* compiled by George Ryley Scott. It consists almost entirely of extracts from the Encyclopaedia. Dr. Swaroop has taken great pains in editing this little volume, which deals with sexual 'abnormals' and strange practices, religious and social customs, beliefs and superstitions in the field of sexology. This is a comprehensive book on sexual abnormalities and practices found in different lands.

J. DHAR

A Doctor in the Army—By Satyen Basu, D.M.R. (LOND.), MAJOR I.A.M.C. (RET.). 1960; Das Gupta & Co. Private Ltd., 54-3, College Street, Calcutta 12; 8½"×5½"; pp. 340; Rs. 10·50.

The writer, an eminent radiologist, joined the Indian Army Medical Corps in 1940 as a King's Commissioned Officer. After certain preliminary training he was sent abroad to the Middle East where he gained his first experience in modern warfare. In the Middle East the author was taken prisoner by the Germans but was ultimately handed over to the Italians

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J.J. MS.1

in Benghazi. After being released from captivity the author made a brief tour of the Middle East before being finally out of the army.

Though this book appears to be the author's first enterprise it is excellent and lucid in description and the various chapters are thought-provoking. The language of the book deserves special mention. For an Indian such a mastery over a foreign language is highly commendable. As the major part of author's life in the Army was spent as a prisoner, his prison days are described with special care. In this chapter one can certainly make a clear-cut mental picture of the prison camps run by Italians and how they behaved with different classes of soldiers.

Though the author could not make any extensive tour of the Middle East, the reader can, from what he had, have a fair amount of knowledge of this region regarding the social, economic and political life of the people.

The work is an excellent publication and should be of interest to all members of the profession.

SUKOMAL SEN

Lymphocytes and Plasmacytes in Nucleoprotein Metabolism—By Margaret A. Kelsall and Edward D. Crabb; Annals of the New York Academy of Science, vol. 72; 9"×6"; pp. 40 (293-338); $2.00.

There is a lot of controversy regarding the role of lymphocytes and plasmocytes in the body. This monograph contains very illuminating discussions on the functions of these cells in the body in health and disease. Some of the functions, for instance the role played by lymphocytes in the synthesis of fibrinogen by the liver or the role of plasmacytes in the synthesis of the zymogen granules of the salivary gland, are not very well known. In each instance the argument is supported by adequate references. This booklet will interest persons engaged in haematological research.

H. SAHA

Proceedings of A Symposium on Immunization in Childhood, 1960—E. & S. Livingstone Ltd., Edinburgh and London; 9·6/10"×7", pp. 130; price not mentioned.

Immunisation in childhood constitutes a sizable significant part of paediatric and general practice. The procedure and technique of different preventive inoculations advocated by various authors in the medical literature, however, are not uniform and cause much confusion to the practising doctors. No agreed inoculation schedules have been known prior to the publication of the proceedings of this Symposium held in the Wellcome Building, London, where representatives from all sections of the profession connected with the problem took part.

The symposium besides providing a survey of recent knowledge on various immunisations, recommended certain agreed schedules to be followed. It was split into 5 sessions. Each session started with opening and supporting papers by eminent experts followed by a discussion. Finally, in the appendix the recommendations of the symposium are detailed. The first session devoted itself mainly to immunisation hazards of polio, pertussis and smallpox. Dr. G. W. Griffith while speaking on 'The best age for smallpox vaccination' suggested 1 to 4 years to be the ideal age for vaccination instead of doing it in infancy, since post-vaccinal encephalitis, eczema and other skin conditions are, contrary to common belief, commoner in infancy than in older children. This was also adopted by the symposium. In places like Calcutta where epidemics occur every year, it will be, however, unwise to postpone the smallpox vaccination after 1 year as advocated by the Symposium, since the incidence of smallpox in infancy is not negligible.

In two subsequent sessions, different immunisation techniques and procedures were dealt with, including a paper on personal records of inoculations. The 4th session discussed the immunisation programmes to be adopted and in the final session the recommendations of Schedules were adopted after discussion.

The production is good and the articles are well documented, so that the book provides a useful first-hand information for all interested in the subject.

S. K. ROY

Pathology of Infancy and Childhood—By Agnes R. Macgregor, M.D., F.R.C.P.E., F.R.C.O.G. 1960, E. & S. Livingstone Ltd., Edinburgh and London; 8½"×5½"; pp. viii+631; 75sh. net.

This book offers to those who are interested a valuable treasure on the much-needed neonatal and childhood pathological studies, by a recognised authority on child pathology.

In the preface, the author has rightly emphasised the need of specialised studies on morbid anatomy and histopathology of the newborn and small children, since they are so very different from adult tissues. Besides, the text-books make only sketchy references to neonatal pathology, and although many brilliant publications devoted mainly to clinical paediatrics are available, books restricted to neonatal and childhood pathology are very few. In fact this is a unique publication, where the author has dealt admirably with various pathological states occurring in infancy and childhood, including foetal and neonatal pathology.

The work is divided into 9 parts. Part 1 deals with pathology of the foetal and neonatal periods including a chapter on placentas and appendages. Part 2 is devoted to various forms of congenital deformities and malformations encountered in paediatric practice. In subsequent parts the author has described brilliantly, infective diseases, collagen and allergic diseases, diseases of metabolism and nutrition, accidental injuries and poisoning, neoplastic diseases, diseases of blood, diseases of the nervous and locomotor system, some diseases of skin and miscellaneous diseases. She makes some observations on sudden deaths in infancy in a small chapter which will be illuminating to those who still think most cases of sudden deaths are due to suffocation. In the appendix her notes on the technique of necropsies in cases of perinatal deaths will be very helpful for those who undertake necropsy studies in the newborn. The reproduction of halftones is up to the usual superb standard of the

publishers, with brilliant illustrations and coloured photographs.

S. K. ROY

Strengthen Your Heart—By V. Zelenin, translated from the Russian by David A. Mishne, edited by M. Smith. 1959; Foreign Languages Publishing House, Moscow; National Book Agency (Private) Ltd., Calcutta 12; 7¼"×5"; pp. 134; Re. 1·87.

Diseases of the heart and the blood vessels have unfortunately become a concomitant of modern life. More and more people are suffering from them and hence there is demand for a better understanding of these ailments. An experienced speaker on the subject and a member of the U.S.S.R. Academy of Medical Sciences, the author has in this slim paperback tried to answer the questions he is often asked as well as to remove the many misconceptions people have about cardiovascular diseases.

Divided into three chappters, it deals first with the anatomy and physiology of circulation, then discusses what helps to strengthen the cardiovascular system and finally gives an account of the diseases of the heart and blood vessels. For the lay reader, for whom the book is meant, the second chapter is of more practical value. The topics discussed under it are: diet, hardening physical culture and sport, work and rest, prevention of neuroses and fight against drinking and smoking.

The book, it is pointed out in the Preface, "will not help either to diagnose the disease or to estimate its seriousness", and that "the patient will not be able to treat himself; nor should he attempt to do so", but will aid him "to organise his life in a manner that may contribute to the success of the treatment".

S. P. CHAUDHURY

OBITUARY

Lt. Col. Gurbaksh Singh

Dr. Gurbaksh Singh was born in 1897. He passed the L.S.M.F. examination with honours in 1923. He joined the Jaipur Army in 1923 as a Rasildar and was commissioned in 1934. His services in the world war (1939-45) were appreciated and he was promoted to the rank of a Major, and was awarded Distinguished Service Order (D.S.O.).

Jaipur State Government awarded him 250 acres of agricultural land in recognition of his meritorious services and he was promoted to the rank of Lieut. Col. in 1947.

LT. COL. GURBAKSH SINGH

Dr. Singh used to take active part in professional and social organisations and rendered valuable services as a member of various committees. He was president of the Jaipur Medical Association in 1950 and once presided over the Rajasthan Medical Conference. He was hony. secretary of the Indian Red Cross Society, Rajasthan State Branch from 1953-55. He was president of the Boy Scouts Association and a member of the All-India Radio Programme Advisory Committee. He took keen interest in sports and was a popular figure in social circles. He was also the president of Gurudwara Singh Sabha from time to time and President of the Siksha Samiti, a school of Jaipur, at the time of his death.

His demise has created a void which will be hard to fill.

YOUR QUESTION

Correspondents should give their names and addresses (not necessarily for publication) and include all relevant details of the questions which should be typed. Questions of medical interest will only be accepted for this section. They should be sent in a separate envelope marked "Your Questions". Questions of general interest will be published in preference. Lack of space precludes answering all the questions received.

ED.—*J. Indian M. A.*

Icterus in the Newborn

Q. A woman, aged 26, had her first child (female) born when she was 16. The child is alive and healthy. At 19 she gave birth to her second child (male) who died of pneumonia when one month old. The third child (female) born at 21 is alive and healthy. Her fourth child (male) at 24 developed icterus on the 7th day and expired 3 weeks later. At 26 she gave birth to her fifth child (male). Icterus started in this child from the 5th day and he died 2 days after.

What may be the cause of this icterus? What prophylactic measures can be adopted in future pregnancies and what should be the treatment in case the icterus occurs?

Ans. The first thing to do is to find out the Rh of both husband and wife. No definite advice can be given on the data provided. 'Icterus' is not a definite diagnosis. The condition of the cord in the case of the fifth child should have been mentioned. The fourth child developed icterus on the 7th day and died after three weeks. Was any treatment adopted or was the blood count done? It is difficult to presume the diagnosis of 'erythroblastosis' on the data provided.

Other conditions which may give rise to this clinical history are (1) congenital syphilis, (2) umbilical sepsis, and (3) congenital malformation of bile tracts. Investigations should be carried out to establish or eliminate these conditions, and adequate treatment undertaken where necessary. There is no satisfactory treatment for atresia of biliary passage at this age.

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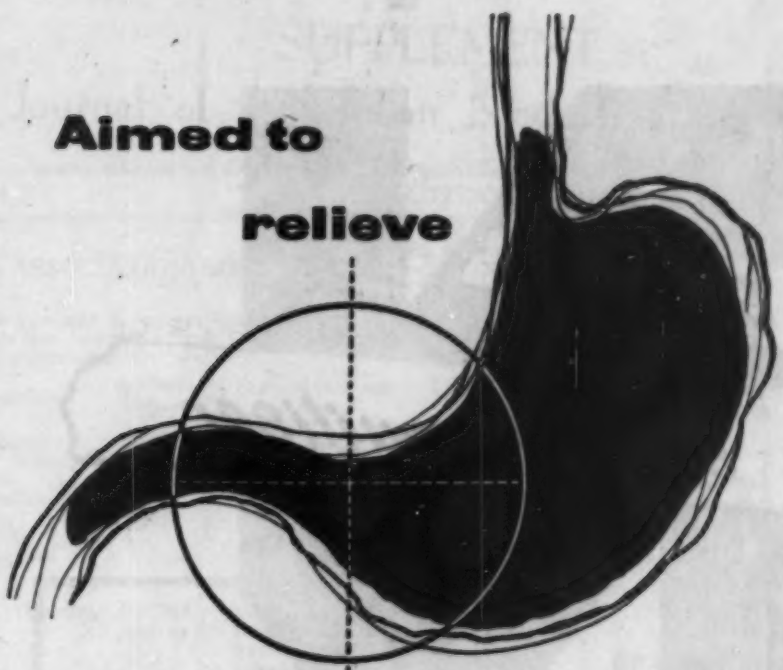

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SUPPLEMENT

Journal of the Indian Medical Association

Vol. 35, No. 10 CALCUTTA November 16, 1960

ASSOCIATION NOTES

List of doctors sent to various Canadian and American Hospitals for Internship and Residency Training for the term commencing 1st July 1960.

Name of candidate	Subject of training	Hospital to which sent
CANADA		
1. Dr. Nirmalendu Kanjilal (Assam)	General Surgery	Ottawa General Hospital, Ottawa, Ontario, Canada.
2. Dr. Sharadchandra Deshpande (Jalna, Maharashtra)	—do—	—do— —do—
3. Dr. Daulatram (Mysore)	—do—	(Joined duty on 15-9-60
4. Dr. Joseph Rajasekaran (Tiruchirapalli)	Ophthalmology	Toronta East General and Orthopaedic Hospital, Toronto, Ontario, Canada.
5. Dr. S. N. Rai (Lucknow)	Rotating Internship	Vancouver General Hospital, Vancouver, B.C., Canada.
6. Dr. Abdul Jalil (Aligarh)	—do—	St. Mary's Hospital, Montreal, Canada.
7. Dr. D. M. Mehta (Tumsar Road, Maharashtra)	—do—	Queen Elizabeth Hospital, Montreal, Canada.
8. Dr. B. L. Chowdhury (Monghyr Dist., Bihar)	—do—	Holly Cross Hospital, Calgary, Alberta, Canada.
9. Dr. S. C. Khaneja (Satna, M. P.)	—do—	St. Catharines General Hospital, St. Catharines, Ontario, Canada.
10. Dr. (Miss) Gita M. Javeri (Bombay)	—do—	—do— —do—
11. Dr. Umesh Khare (Lucknow)	—do—	Ottawa General Hospital, Ottawa, Ontario, Canada.
12. Dr. K. P. Mohamed Babu (Ernakulam)	—do—	St. Joseph Hospital, Hamilton, Ontario, Canada.
13. Dr. S. S. Rajhans (Sultanganj, Bihar)	—do—	Saint John General Hospital, Saint John, N.B., Canada.
14. Dr. P. Mohamad Iqbal (Tiruchirapalli)	Paediatrics	St. Paul's Hospital, Vancouver, B.C., Canada.
15. Dr. Surinder Lal (Kanpur)	Rotating Internship	Kingston General Hospital, Kingston, Ont., Canada.
16. Dr. Syed Haider Ali (Arrah)	—do—	Calgary General Hospital, Calgary, Alberta, Canada.
17. Dr. P. C. Dutta (Calcutta)	Rotating Internship	Queen Elizabeth Hospital, Montreal, Canada.
18. Dr. S. K. Sharma (Beawar, Rajasthan)	—do—	St. Joseph's Hospital, Sarnia, Ont., Canada. (Joined duty from 1-9-60).
19. Dr. Mohammad Siddique (Delhi)	Rotating Internship	Ottawa General Hospital, Ont., Canada. (Joined on 1-9-60).
U.S.A.		
20. Dr. (Miss) K. D. Rlikutty (Trichur)	Rotating Internship	French Hospital, San Francisco, California, U.S.A. (Left on 9-7-60).
21. Dr. J. Paulo Gomes (Bombay)	—do—	Overlook Hospital, Summit, N. J., U.S.A. (Joined on 1-9-60)

BRANCH NOTES

ALLEPPY BRANCH—The annual report for the year 1959-60 shows that there were 42 members in the beginning of the year and it came down to 33 due to transfers and members going for higher studies.

10 meetings were held during the year from 17-10-59 to 7-10-60 in which various scientific subjects were discussed.

The annual meeting of the year 1959-60 was held on 7-10-60. 31 members attended the meeting and Dr. Mary Mathew and Dr. Betty Cowan addressed the members on Ischaemic Heart Disease.

The following members were elected for 1960-61: President—Dr. M. S. Ramachandran; Vice-President—Dr. K. Radhamma; Hony. Secretary—Dr. K. N. Pillai; Jt. Hony. Secretary—Dr. K. S. Shankar; Treasurer—Dr. P. N. Kumaran Nair. Representative to the Provincial Council—Dr. Jacob Thomas; Representative to the Central Council—Dr. K. K. Nair.

BARSI BRANCH—Dr. Kirtane, the president of the Maharashtra State Branch, paid a visit to the branch on 26-9-60. Dr. Hiremath, the president and Dr. Kamboj, the secretary, received him at the station. In the special general meeting held, the president of the branch accorded a hearty welcome to Dr. Kirtane. He gave a history of the branch from its start in 1936. Dr. Kirtane in his speech appealed to the members to increase membership. He asked them to enlist the co-operation of the public by social service. He requested the branch to start leprosy centres and explained the importance of family planning. The meeting ended with a dinner.

BHATAR BRANCH—The annual report of the branch shows that the membership strength in 1959-60 was 22. Six general meetings were held during the year. The annual general meeting was held on 19-3-60. The auditor's report was adopted. Dr. A. B. Mukherjee and Dr. N. G. Mandal were elected members of the Bengal Provincial Council. Dr. H. S. Mukherjee was elected as asst. secretary.

BIJNOR BRANCH—The following were the office-bearers of the branch for 1960-61 : President—Dr. M. A. N. Moizuddin; Vice-President—Dr. K. A. Singh; Secretary—Dr. R. N. Mathur; Jt. Secretary—Dr. A. A. Shamsi; Treasurer—Dr. R. N. Mathur; Auditor—Dr. C. L. Sahi. Representative to the Central Council—Dr. D. S. Gupta, to the State Council—Dr. C. P. Kulashreshtha, Dr. Miss V. Kanat.

BISHNUPUR BRANCH—The annual general meeting was held on 29-8-60. Dr. S. D. Banerjee presided. A branch building was proposed to be constructed during 1960-61. The annual report and accounts were adopted. Office-bearers for 1960-61 were elected with Dr. S. D. Banerjee as president; Dr. P. B. Mukherjee and Dr. B. B. Chowdhury as vice-presidents; Dr. A. B. Mitra as hony. secretary; Dr. N. K. Mallick as asst. secretary; Dr. B. Kar as treasurer.

BOMBAY BRANCH—A Brain Trust Meeting was held on the 20th July 1960 at Birla Matushri Sabhaghar. Dr. J. C. Patel was the Question Master and the following members represented different specialities :

Surgeon—Dr. Arthur De Sa; Physician—Dr. B. B. Yodh; Paediatrician—Dr. Shantilal C. Sheth; Gynaecologist—Dr. B. N. Purandare; Psychiatrist—Dr. J. C. Marfatia; Cardiologist—Dr. K. K. Datey; Dean and Hospital Superintendent—Dr. S. V. Joglekar; E.N.T. Surgeon—Dr. Joe V. Desa; Ophthalmic Surgeon—Dr. H. D. Dastur; Pathologist—Dr. Vinod G. Daftary; Orthopaedic Surgeon—Dr. K. T. Dholakia; Dermatologist—Dr. H. A. Maniar; Administrative Officer (E.S.I.S.)—Dr. S. K. Das : Radiologist—Dr. L. H. Athle; Industrial Physician—Dr. S. V. Bhatt; General Practitioner—Dr. Mrs. Lalitha Rao; Panel Doctor—Dr. Arvind M. Shah; Question Master—Dr. J. C. Patel.

Question Papers were distributed and very interesting questions were asked by the members of the profession and the Question Master, Dr. J. C. Patel, specialists of different branches replied them. The replies were very interesting and instructive.

The following are some interesting questions and answers :

Q. 1. Is Trichonomas Vaginalis and Monilia Vaginalis infestation venereal? If declared so, will it not create suspense in partner to doubt infidelity? How will you handle such cases?

Ans. Dr. B. N. Purandare : It should not be considered venereal infection.

Dr. J. C. Shroff : It is difficult to say who may not have venereal infection.

Q. 2. In your general practice whenever a private examination of male member for venereal diseases, piles, hydrocele, hernia etc. is to be made, do you keep the wife of the patient present during such examination, or your male compounder, just as a male doctor keeps the husband or nurse during examination of his female patients?

(ii) Do you charge consultation fees for first and subsequent examinations?

Ans. Dr. Mrs. Lalitha Rao : All patients are considered on equal level without caring for sex.

(ii) Yes, for first.

Q. 3. We hear of spiritual healing by visits of missionaries, priests, visionaries etc. Please let us know your opinion and experience.

Ans. Dr. J. C. Marfatia : Visits by missionaries and priests have a psychological effect, and hence they are useful in early healing and cure.

Q. 4 (i) Please describe the nature of your duties in details after the introduction of ESI Scheme in your factory?

(ii) What preventive and safety measures do you adopt for preventing illness and accidents?

Ans. Dr. S. V. Bhatt : Preventive work, checking up of employees, physical examination, follow-up, rehabilitation, safety programme etc.

Q. 5. Is sickness absenteeism reduced or increased after the implementation of the ESI Scheme?

Ans. Dr. S. V. Bhatt : Sickness absenteeism has increased.

Dr. S. K. Das : Sickness incidence and absenteeism are reduced. Bombay Labour is healthier.

Q. 6. Can immature cataract be operated with safety?

Ans. H. D. Dastur : Yes. One has to select cases, do iridectomy first, and then removal of cataract.

Q. 7. What is your experience and observation regarding the application of electric suction to the caput of the newborn child instead of using forceps?

Ans. Dr. B. N. Purandare : I have not used it much, and the method is not popular in India. Moreover these rubber materials are not durable.

Q. 8 (i). What are the commonly prevailing ailments in your general practice now?

Ans. Dr. Arvind M. Shah : Gastro-enteritis, hepatitis, jaundice, dysentery.

Q. (ii). What measures as Chairman of the Medical Relief Committee you would like to suggest?

Ans. (ii) Dr. Arvind M. Shah : Improvement in water supply and boiling water before use.

Q. 9. What is your opinion about the use of alcohol as a sedative and tranquilliser in cardiac cases? Is it superior to other pharmaceutical or patent drugs? Your opinion and experience.

The above question was put to Dr. K. D. Datey, Dr. B. B. Yodh and Dr. Shanti Sheth. They all agreed that alcohol is a good tranquilliser and sedative.

Q. 10. In allergic rhinitis and congested and swollen nasal septum are not operations performed when they are not indicated? Your opinion and experience.

Ans. Dr. Joe V. Desa : It is difficult to say; but it is better to start with antihistamines in allergic conditions.

The foregoing were some of the most interesting questions put to various members of the panel, and the answers they provided.

Then the Master Questioner, Dr. J. C. Patel, put some questions on the following subjects to the members mentioned below :

(i) Tuberculosis and its treatment—Dr. B. B. Yodh.
(ii) Hospital Administration, Sepsis, Sterilisation and Medical Education—Dr. S. V. Joglekar.
(iii) On surgical matters—Dr. Arthur De Sa, Surgeon. On dermatological matters—Dr. J. C. Shroff, Dermatologist. On radiological matters—Dr. L. H. Athle, Radiologist.

The answers furnished were interesting and instructive.

A condolence meeting of the branch was held on 12th August 1960 at Sir Hurkisondas N. Hospital Nurses Quarters to mourn the sad demise of Dr. C. A. Martins and Dr. D. S. Nadkarni, one of the founder members. Dr. A. D. Daftary spoke about the sudden and untimely death of Dr. D. S. Nadkarni, and Dr. C. A. Martins, both from Coronary Thrombosis. Dr. R. V. Sathe, the Chairman, moved the resolution of condolence and heartfelt sympathy to the bereaved families. The resolution was passed unanimously.

The Bombay Branch held a clinical meeting on 12th August 1960 at Sir Hurkisondas N. Hospital Nurses Quarters. Dr. J. Vakil gave a very interesting lecture on "New Trends in Gastro-enterology". Dr. R. V. Sathe presided. Dr. R. V. Sathe spoke on his experiences. There was good attendance.

A clinical meeting was held on the 19th August 1960 at Sir Hurkisondas N. Hospital Nurses Quarters. Dr. M. G. Pradhan gave a lecture on "Common Laboratory Tests" (their indications and interpretations). He spoke on blood analysis, culture, Widal test, glycosuria and

blood sugar test. Dr. Harabhai S. Patel, a senior Pathologist, presided. There was good attendance.

STATE GIFT OF LAND

A function to commemorate the event of a gift of a plot of land by the State of Maharashtra for the construction of a building for the Bombay Branch, I.M.A. was held at the National Sports Club of India, Hornby Vellard, Bombay on 14-8-60. Shri Yeshwantrao B. Chavan, Chief Minister of Maharashtra State, graced the occasion. The function started at 3-30 P.M., members of the medical profession, pharmaceutical concerns, invited guests, dignitaries, and others were present in large numbers.

Dr. N. N. Kailas welcomed the Chief Guest Shri Y. B. Chavan, Shri S. K. Vankhede, Shri Homi J. H. Taleyarkhan, the invited guests and the members. In his speech he referred to the unique work of Shri Y. B. Chavan since he took the chief ministership of the former bilingual State of Bombay and the present State of Maharashtra. He referred to the function as a happy one when the State is donating a plot of land for the building.

Dr. V. K. Toraskar read the following messages of good-will :

1. From Dr. Jivraj N. Mehta, Chief Minister, Gujrat State.

"I am deeply grateful for the invitation extended to me to be present at the function to commemorate the occasion of a gift of a plot of land by the Government of Maharashtra for the construction of a building for the Indian Medical Association, Bombay. I congratulate the Association on its thus being able to have its own building, thus fulfilling the long-felt need. It was indeed very good of the Government of Maharashtra to generously treat the Bombay Branch of the Indian Medical Association. I wish the Association and this function all success."

2. From Dr. H. N. Shivapuri, President, I.M.A., Centre.

"It is really an occasion to commemorate. Please convey my congratulations and greetings to all Bombay friends on this happy occasion. I am so sorry, I will miss the function as I have to go to Delhi to attend the meeting of the panel of health of the Planning Commission of India."

3. From Dr. P. K. Guha, Editor, *Journal of the Indian Medical Association.*

"I congratulate you and your branch on your securing a plot of land from the Government to construct the building for your branch. I thank you and your branch very much for your kind invitation to the function to be held in this connection on August 14, 1960. I am sorry, I shall not be able to attend the function due to various pre-occupations. I, however heartily wish success to the function and look forward to the days when you hold a similar function on the occasion of opening the building construction on this plot of land. With kind regards to you and other friends of Bombay."

Dr. V. K. Toraskar further mentioned the names of the following who extended best wishes to us on this occasion. Shri P. K. Savant, Minister for Agriculture, Shri Madhusudan Vairale, Dy. Minister for Agriculture, Shri N. U. Deshmukh, Dy. Minister for Education and Power, Shri M. D. Chaudhari, Dy. Minister of Revenue, Government of Maharashtra; Consul General of the Republic of West Germany and Dr. V. R. Khanolkar, Vice-Chancellor of Bombay University, Dr. S. C. Sen, Shri Lalchand Hirachand, Shri Pratapsing Mathuradas, Lt. Col. Tejasing Uberoi and several others.

Dr. C. L. Jhaveri, the President of the branch, read the following speech :

"On behalf of myself and the members of the Indian Medical Association, I feel highly grateful to you all for responding to our invitation. Today is the unique occasion when we have assembled here to commemorate this event for the generous donation of a plot of land by our esteemed guest Shri Y. B. Chavan, the Chief Minister of our State of Maharashtra.

Our Association has realised to some extent our cherished hopes of having a plot of land to construct a building, housing various medical activities to render service to the profession and the masses of this great metropolis and provide some recreational amenities to the members of the Association.

The idea of having a plot of land to construct a building was conceived by our senior colleagues many years ago, but could not be realised due to paucity of funds. It is to the credit of the medical profession of this great city that a large majority of us are connected with the honorary services to various public hospitals,

SHRI Y. B. CHAVAN, CHIEF MINISTER, MAHARASHTRA STATE SPEAKING, AFTER DELIVERING THE DOCUMENT OF GIFT OF A PLOT OF LAND TO DR. C. L. JHAVERI, PRESIDENT OF THE BOMBAY BRANCH, I.M.A.

A GROUP OF INVITED DIGNITARIES, GUESTS, IMA PAST PRESIDENTS AND MEMBERS OF IMA ASSEMBLED AT THE FUNCTION TO COMMEMORATE THE GIFT OF LAND FOR THE IMA BUILDING.

charitable institutions and dispensaries. We highly appreciate this magnanimous offer of a plot of land by our popular Chief Minister Shri Y. B. Chavan. By this offer, a great responsibility is put upon us and that is to collect enough funds to construct a building befitting our Association and our State. We have laid out repeatedly in our monthly programme books the various ways by which one and all of us can render yeoman service to this association, and be one of the architects of our citadel.

Friends, it shall be a great gesture on your part if you show us many more ways of collecting funds, to which a target of Rs. 5 lacs is fixed to construct this building. We have about 1,100 members to the credit of the Association in Bombay, but at least an equal number still remains unapproached. All of us, by our concentrated efforts can render great help if we make all the eligible non-members as members of this Association. We can achieve a great deal and render varied assistance in many fields of medicine including research. We hope to start the erection of our building in the nearest future. But for your close co-operation and active support, our ambition may remain unfulfilled. I actively solicit the members of our Association today to contribute at least a sum of Rs. 100/- within the coming year either as your donation or through your friends individually and/or collectively.

We are extremely fortunate in having our Chief Minister to grace today's event. His spontaneous and willing support has helped many institutions in realising their objects. Friends, you all remember very well the speech given by Dr. B. C. Roy, the Chief Minister of West Bengal, while inaugurating the Silver Jubilee Celebration of the Bombay Branch, Indian Medical Association on 18th February 1960. Before the august gathering he pointed out that 'there should be no difficulty for you, Dr. Jhaveri in getting the necessary funds from the Finance Department of your State.' At the last All India Conference of the Indian Medical Association held in Indore, Shri D. P. Karmarkar, the Union Minister of Health, declared at the inaugural address that the Ministry of Health will help by all possible means any branch of the Indian Medical Association in India who submits a plan to start a College of General Practitioners on the lines of the College of General Practitioners in Great Britain, New Zealand and the United States of America. Accordingly an urgent meeting of the Bombay Territorial Council, I.M.A., was called to discuss this subject and the subcommittee was formed and accordingly we informed the Union Ministry of Health and the Indian Medical Association, Centre, New Delhi. We are sure our Chief Minister will help us in getting a small but substantial share from some of the unused earmarked funds, of our state which would help us further in steering our plans for the establishment of a college for the General Practitioners in Bombay. We shall always look upon him as and when we are in need of some funds to construct this Building.

Last year, some of us had the privilege to visit the American Medical Association offices in New York and Chicago. While attending the World Medical Association Assembly in Montreal, we had the privilege to observe the activities of the World Medical Association in New York. Colossal amounts of money have been spent to construct the building of the American Medical Association and the Association does the pioneering service to the profession, the pharmaceutical industry and the people at large. It will not be out of place if I were to appeal to the representatives of the pharmaceutical industry who are present here and those who are unable to come due to unavoidable circumstances. You have always been ready to respond to our appeals and we are sure, you will contribute liberally towards our building and see that with your co-operation it is completed in the shortest possible time.

It will not be out of place if I can make a suggestion at this juncture to the Pharmaceutical Industry. It is motivated in some parts of South America that the pharmaceutical industry can help the Medical Associations in a substantial way in raising funds for various activities like construction of the buildings and establishing medical libraries. It is true that the representatives of the pharmaceutical companies take a good amount of time discussing their products during the busy hours of medical practice. Equally it is true that a good amount of money is also spent towards professional sampling of their products. Hence in some parts of South America it is professed that the pharmaceutical concerns can indirectly compensate the medical profession by helping them construct their Association buildings, and in such other activities, for the great sacrifice of time made by the medical men for the representatives while discussing their products. Even a substantial help can be rendered by presenting only the literature and saving money for the Association by avoiding liberal sampling.

It is said that the modern medicine is not cheap. But I can vouchsafe and say that our charges have not increased even by 10 per cent in the last 10 years compared to the ever increasing cost of living. We have always been happy at the static behaviour regarding this aspect of our life. It is possible that the cost of medicine closely connected with the progressive research in the realm of advancement makes the modern medicine costly. However our Government can render a great service to the profession and the masses by adopting the most suitable policy of 'generic formulae' in various medicines like vitamins, haematinics, chemotherapy and antibiotics as proposed to be adopted in the United States of America.

In the end, I appeal to you all for close co-operation and active support to realise our dreams. In our new building we shall have various spheres of activities like, —to house a popular vast reading and reference library, to hold scientific deliberations and clinical meetings, to have research units in common problems connected with health, to organise relief squads in times of emergencies and epidemics, to organise preventive medicine and public health programmes and family planning, to invite All India Medical Conferences and extend invitation to international scientists. With the varied proposed activities the members of this Association can act as a liaison between the Government and the public in matters of health. I hope, we all meet next year on the eve of our Independence day in our new building."

Dr. Jhaveri next requested Dr. Mrs. Lalitha Rao to garland the Chief Guest and other guests.

Shri Y. B. Chavan handed over the document of the plot of land to Dr. C. L. Jhaveri. Dr. Jhaveri thanked the Chief Minister for this unique gift from the State of Maharashtra.

Shri Y. B. Chavan said that Bombay is known not merely for its riches, but mainly as the home of knowledge in science, research and various other fields, including medical science, which deserves encouragement from all quarters. Our progress depends upon the development of technical and scientific knowledge, and the State fully realises the importance of research. He assured the audience that Government will not lag behind in providing help and financial assistance for the advancement of technical and scientific knowledge. Hence it is prepared to make funds available to the medical profession in the State. He however impressed upon the profession that it should not expect monetary assistance from Government for the construction of the proposed building. Persons in the profession and pharmaceutical industries should raise the required funds for furthering the project.

A replica of I.M.A. crest in a beautiful box was presented by Dr. Suresh C. Sheth, President, Bombay Territorial Branch to Shri Y. B. Chavan who accepted the same with thanks.

Dr. C. S. Thakar, a past President of I.M.A., gave the following speech :

I have before me a very talented audience. I wish to take this opportunity to discuss some problems with regard to the maintenance of the health of this premier city. One of the most important factors in creating a positive health is the supply of adequate nutrition with food of good quality regulated according to scientific principles. The other factor concerned in maintaining a city's health is the creation of health consciousness amongst the people by educating them to maintain personal hygiene, social hygiene, environmental hygiene, and building up resistance against infections by preventive inoculations like B.C.G. vaccinations and such other inoculations against bacterial and virus infections. In this twin method, we, members of the Indian Medical Association of Greater Bombay will continue to give the Government of Maharashtra all possible assistance at our command.

Dr. R. K. Menda also spoke on the occasion. He also joined the other speakers in thanking the Chief Minister for his generosity. He emphasised that the constructions of the building was a matter of urgency and importance. Steps will have to be taken to collect

DR. C. L. JHAVERI
PRESIDENT, BOMBAY BRANCH, IMA

DR. A. D. DAFTARY
HONY. JOINT SECRETARY
BOMBAY BRANCH, IMA

DR. V. K. TORASKAR
HONY. JOINT SECRETARY
BOMBAY BRANCH, IMA

funds, if need be going from door to door. Later, when funds are available, efficient and careful planning of building would be necessary to meet with the growing requirements of the profession. He also solicited the co-operation of pharmacentical concerns at this important juncture.

Dr. A. D. Daftary proposed a hearty vote of thanks to the State of Maharashtra for the gift of a plot of land, to Shri Yeshwantrao B. Chavan who, in spite of his multifarious activities and heavy responsibilities of administration for having kindly graced this occasion. He also thanked Shri S. K. Vankhede, the Minister of Finance, Shri Homi J. H. Talyearkhan, Minister of Public Health, Dr. N. N. Kailas, the Dy. Minister of Co-operatives, Shri Abhyankar, the Collector of Greater Bombay, the past Presidents of IMA, other invited dignitaries, friends and members. He thanked the donors for the munificent donations to the building fund and the pharmacentical concerns for their very active and valuable support. He also thanked the members of the managing committee and sub-committees for their willing co-operation.

CHAPRA BRANCH—The annual general meeting of the branch was held on 15-10-60. Dr. Akhoury B. P. Sinha presided. Office-bearers for 1960-61 were elected with Dr. Akhoury B. P. Sinha as president; Mr. Mrs. K. Banerjee and Dr. Kandhjee as vice-presidents; Dr. L. P. Verma as hony. secretary; Dr. Sridhar Mukund as joint secretary. Dr. L. P. Verma were elected to the Central Council; Dr. J. N. Choudhury, Dr. H. K. Das, Dr. L. P. Verma to the Provincial Council. The annual report and accounts were presented. Dr. J. C. Das Gupta discussed an interesting case with skiagram. The meeting closed with the annual dinner.

CHINGLEPUT BRANCH—A general body meeting was held on 24-9-60. Dr. P. K. Varghese presided. The minutes of the previous meeting and accounts for 1959-60 were passed. Office-bearers for 1960-61 were elected with Dr. P. K. Varghese as president; Dr. B. K. Shenoi as vice-president; Dr. A. Sundararaja Rao as secretary and treasurer; Dr. P. K. Varghese as member, Central Council; Hony. secretary, Dr. P. S. Ananthanarayan, Dr. P. K. Varghese and Dr. A. Rajagopalan as member, Provincial Council. Dr. M. Natarajan spoke on Management of Common Skin Conditions (with kodachrome slides demonstration).

DARBHANGA BRANCH—A meeting of the branch was held on 15-10-60. Office-bearers for 1960-61 were elected with Dr. B. P. Singh as president; Dr. Hari Prasad and Dr. S. S. Huda as vice-presidents; Dr. P. N. Sinha as hony. secretary; Dr. Miss R. S. Ghose as joint secretary; Dr. Shree Mohan Mishra as treasurer; Dr. K. P. Agarwal as auditor.

DATAN BRANCH—A general meeting was held on 1-10-60. Dr. R. N. Chakravarty was in the chair. Ten members were present. Proceedings of the last meeting were confirmed. The following office-bearers for 1960-61 were elected: President—Dr. K. Mahapatra; hony. secretary—Dr. J. Bhowmik; hony. treasurer—Dr. S. Saha; members for Provincial Council—Dr. J. C. Datta and Dr. B. C. Jana; Members for the Central Council—Dr. D. Mukherji and Dr. R. N. Chakravarty. It was decided to have more frequent meetings (6 in a year) and to hold a rural conference. A discussion was held on Cholaemia.

DEORIA BRANCH—The following are the office-bearers of the branch for 1960-61: President—Dr. A. U. Khan; vice-president—Dr. B. P. Mohindra; secretary—Dr. A. K. Sanyal; jt. secretary—Dr. R. Chanda; treasurer—Dr. Jagat Singh; auditor—Dr. A. K. Roy; librarian—Dr. S. N. Mukerjee; Representative to the Central Council Dr. S. N. Mukerjee, to the State Council—Dr. B. P. Mahindra.

DHULIA BRANCH—The annual report of the branch for the year 1959-60 shows that the foundation stone ceremony of the association building was held on 28-4-60. It was laid by Dr. H. N. Shivapuri, the president of IMA. The membership has slightly decreased. Nineteen meetings in all were held. Some eminent doctors from outside were invited to deliver lectures in the meetings. Dr. Wardekar spoke on Leprosy; Dr. J. C. Patel on Haematological Disorders; Dr. Deshmukh on Tuberculosis; Dr. R. V. Sathe on Diabetes; and Dr. Deshmukh on Modern Trends in Anaesthesia. Dr. Shivapuri and the health minister Shri Homi J. H. Taleyarkhan addressed the members on two occasions.

The following office-bearers were elected for 1960-61: Dr. K. V. Mahajani as president; Dr. K. M. Dugal as vice-president; Dr. Dolatkumar S. Shah as hony. secretary; Dr. S. M. Shinde as jt. hony. secretary; and Dr. B. D. Deo as treasurer.

FAIZABAD BRANCH—The annual report of the branch was presented in a meeting held on 24-9-60. 12 general meetings, 2 executive committee meetings and 12 scientific meetings were held during the year. Office-bearers were elected with Dr. S. K. Mukerji as president; Dr. H. C. Rai, Dr. F. R. Bramwell, Dr. S. N. Gupta as vice-presidents; Dr. H. L. Gupta as secretary; Dr. R. S. Srivastava as scientific secretary; Dr. P. S. Jain as librarian; Dr. R. S. Misra as auditor. Dr. G. H. Pike gave a talk on "State of Medical Work in Australia". Annual dinner was held after the meeting.

GADAG BRANCH—The annual general body meeting was held on 23-9-60. Dr. N. H. Godbole presided. Office-bearers for 1960-61 were elected with Dr. G. S. Kulkarni as president; Dr. M. R. Patil as hony. secretary; Dr. R. A. Jalihal as joint secretary; Dr. B. J. Athawale as treasurer; Dr. G. S. Kulkarni as Central Council member; Dr. N. H. Godbole as State Council member.

Dr. Jalihal read a report of the last year's activities. There were 21 members and 12 monthly meetings were held and three papers were read: (a) Ascites as seen in general practice—Dr. R. A. Jalihal; (b) Unusual Manifestations of Rickets—Dr. R. A. Jalihal; (c) Chronic Endometritis treated with Aureomycin—Dr. R. R. Joshi. Dr. V. G. Kale was felicitated on his 60th birthday and Dr. G. V. Joshi on his being elected as the president of the Mysore State.

JAMSHEDPUR BRANCH—The fifth monthly scientific meeting was held on 20-9-60. Seventy members were present. Lt. Col. S. Kaul gave a talk on The Radioactive Vit. B^{12} in the Investigation of Anaemia. He discussed the basic principles on which the use of isotopes in clinical medicine depended. He also brought out the methods used in tracer studies in general.

JAMTARA BRANCH—The annual general meeting was held on 12-9-60. Fourteen members were present. The proceedings of the last meeting were confirmed. Office-bearers for 1960-61 were elected with Dr. R. B. Choubey as president; Dr. S. P. Ghosh—vice-president; Dr. S. K. Gon as secretary; Dr. P. K. Gon as treasurer; Dr. R. B. Choubey and Dr. A. K. Das Gupta as members of State Council; Dr. S. K. Gon as member of Central Council.

KADI-KALOL BRANCH—The annual report for the year 1959-60 shows that during the year 7 meetings were held in co-operation with Vijapur Branch. One meeting was held at Civil Hospital, Ahmedabad, at the invitation of the Dean, B. J. Medical College, Ahmedabad. During the year 3 new members were enrolled. Specialist from Ahmedabad addressed the meetings and discussions on various subjects particularly Heart-Failure and Diabetes were held. The Branch co-operated with the local Municipality for the Smallpox Eradication scheme. The office-bearers of the next year are: Dr. U. S. Trivedi—President; Dr. G. J. Patel—vice-president; Dr. V. V. Kapadia—Treasurer; Dr. H. N. Trivedi—secretary; Dr. Dr. M. C. Shah—jt. secretary.

KAIRA BRANCH—The general meeting was held on 2-10-60. Office-bearers for 1960-61 were elected with Dr. S. C. Mubarak as president; Dr. R. P. Gandhi as vice-president; Dr. O. K. Shah as hony. secretary; Dr. C. C. Shah as hony. joint secretary.

KALYANI BRANCH—Dr. P. K. Ghosh addressed a public meeting arranged under the auspices of the branch on 10-10-60. The subject was medical care in U.S.A., U.S.S.R. and Japan. The meeting was attended by doctors, nurses and interested persons of the locality.

KANDI BRANCH—At the annual meeting of Kandi branch Dr. B. Chakraverty and Major S. Ghosh were re-elected President and Secretary of the branch respectively. During 1959-60 Drs. M. Dutta Roy, K. Sen Gupta and P. Chowdhury read papers in the clinical meetings. Over one thousand people participated in the World Health Organisation Day celebrated by the branch jointly with the state government. Members of the branch participated in T. B. Seal Sales Campaign. A medical relief for the flood victims of October, 1959 floods of Kandi was organised by the branch. On a representation by the branch secretary nearly fifty maunds of air-dropped putrefied rice were condemned and were not issued as ration by the government. Flood victims were treated free and 828 prescriptions were served free. Several thousand people were given free T.A.B.C. inoculation by the members. The branch worked in close co-operation with the state health authorities during cholera epidemic at Kandi. Instructions to the public regarding preventive measures against cholera were issued by the secretary through local press. Seven milk canteens from where reconstituted milk was daily issued free to children below 12 years were run by Kandi branch in different parts of the subdivision. 20 blankets were distributed amongst poor people.

The branch is organising a library for its members with the help of journals and books that the branch is receiving from the British Medical Association and other friendly sources. The library will function from 1960-61.

Membership strength of the branch is 25 including 3 associate members. Financial position of the branch is sound.

KANPUR BRANCH—A clinical meeting of the branch was held on 14-10-60. The following cases were demonstrated by Dr. S. C. Jain: (1) A case of Congenital Bradycardia, (2) A case of Progressive Muscular Atrophy, (3) A case of Lung Abscess.

The annual report for 1959-60 shows that there are 201 members on 30th September 1960. 45 new members were enrolled during the year. There were 70 meetings during the year including 23 scientific, 21 Executive Committee and 20 Sub-Committee meetings and 12 general body meetings. Amongst the speakers on scientific subjects besides local members were Dr. A. L. Banks, visiting W.H.O. Professor of Social and Preventive Medicine, Dr. R. N. Tandon and Dr. B. G. Prasad from Lucknow.

Regional Conference on the occasion of Annual Day celebration was inaugurated and addressed by Dr. H. N. Shivapuri, President I.M.A. Centre. Flag hoisting done by Dr. Bhola Nath, President, State Branch who also addressed the members. Scientific Session for two days, was followed by contributory dinner on the last day. Other general meetings were addressed by Dr. J. A. Madoux, Cultural Officer U.S.I.S.; Dr. L. A. Gregg, Fellow, Rockefeller Foundation, Major J. J. Singh of Territorial Army, National Savings Organisation Officer. W.H.O. Day, and Family Planning Days were observed by holding exhibition and lectures. Working Committee meeting of I.M.A. central was held on 18th and 19th August 1960.

Local building extension work completed and Five Year Plan, Health and Survey Memorandum, Dr. Kabraji's Memorandum discussed and replied in time. Members offered for Minister of Health's programme of T.B. patients treatment and in disturbances of November 1959 in Kanpur. Protest resolutions on Pharmacy Amendment Bill 1958, and non-inclusion of representative on Kanpur Labour Committee were passed.

Library is maintained for members and public. 518 books in all, 8 have been added this year, 20 monthly, bi-monthly and weekly Indian and foreign journals are being contributed and are being circulated to the members.

Series of Public Health lectures by members in the various educational institutions of Kanpur were given.

KARIMNAGAR BRANCH—The annual meeting of the branch was held on 9-10-60. Office-bearers for 1960-61 were elected with Dr. Ahmed Hussain as president; Dr. C. H. Kupfer Nagal as vice-president; Dr. T. Jagan Mohan as secretary; and Dr. Prandhaw as treasurer. Dr. Karan Parshad narrated his experiences in treating B-Complex deficiencies. Dr. Prantham presented a case of Pellagra. Dr. Ahmad Hussain reviewed 17 cases of Intestinal Obstruction describing the signs, symptoms, differential diagnosis and treatment.

K. G. F. BRANCH—The annual meeting of the branch was held on 23-9-60. Sixteen members were present. The statement of accounts for 1959-60 were adopted. Office-bearers for 1960-61 were elected with Dr. B. Venugopal as president; Dr. M. N. Venkata Subbaiah as vice-president; Dr. M. Punyamurthi as hony. secretary; Dr. H. D. Chandrappa Gowda as hony. joint secretary. Dr. Rajendra Wats was elected to the Central Council and Dr. C. Rajasekar to the State Council.

The monthly clinical meeting was held on 21-10-60. Dr. B. Venugopal presided. Thirteen members were present. A case of Talipes Equinovarus on left side of a girl of 7 after an attack of anterior poliomyelitis was presented by Dr. A. Vasantha Kumar; a case of Chondromyxofibroma of the left tibia in a boy of 13, by Dr. B. Venugopal.

KHAMMAMETH BRANCH—The general body meeting of the branch was held on 2-10-60. Dr. Gulam Marthuza presided. The proceedings of the last meeting were confirmed. New office-bearers for 1960-61 were elected with Dr. Mohd. Gouz as president; Dr. Sayyed A. Majjed as vice-president and Dr. N. V. Sita Rama Rao as secretary and treasurer. The new president requested the members to enlist more members to the I.M.A. After the dinner, given by Dr. Y. Radhakrishnamurthy, was over, it was suggested to have a meeting every month either on the 1st or the 2nd Sunday.

KHARGPUR BRANCH—The annual general meeting of the branch was held on 25-9-60. Eighteen members were present. The annual account of 1959-60 was passed. Office-bearers for 1960-61 were elected with Dr. A. K. Bhattacharjee as president, Dr. B. C. Ghose as vice-president, Dr. H. K. Guha as hony. secretary and Dr. B. N. Sen as hony. treasurer.

MEMBERS OF THE KHARGPUR BRANCH IMA ASSEMBLED AT THE ANNUAL GENERAL MEETING ON 25-9-60.

MEDAK BRANCH—The annual general meeting of the branch was held on 25-9-60. Office-bearers for 1960-61 were elected with Dr. Ibrahim Ali Khan as president; Dr. V. Raghavendra Rao as hony. secretary.

MEERUT BRANCH—A general meeting (clinical) was held on 28-9-60. Dr. O. P. Goel presided. Dr. R. N. Singhal gave a talk on Management of Coronary Heart Disease with reference to the principle of treatment and treatment in details in Angina, Intermediate and Myocardial Infarction. He discussed the role of rest and exercise in Coronary Heart Disease and was of opinion that long and indiscriminate rest was rather harmful. He discussed the role of nor-adrenaline and other vasopressor agents in shock in Myocardial Infarction, also discussed the use of anti-coagulants in the management of Myocardial Infarction. Major Sure, Dr. Ujagar Singh, Dr. R. C. Agarwan discussed the subject.

MORVI BRANCH—A meeting was held on 11-10-60. Dr. K. U. Zatakia of Bombay spoke on Coronary Thrombosis. Dr. C. T. Mehta presided. Office-bearers for 1960-61 were elected with Dr. C. T. Mehta as president; Dr. O. C. Oza as vice-president; Dr. S. L. Munshi as hony. secretary and Dr. P. D. Sonagra as hony. jt. secretary.

NAGERCOIL BRANCH—The annual meeting of the branch was held on 1-10-60. Office-bearers for 1960-61 were elected with Dr. M. Mathias as president; Dr. S. Muthukaruppa Pillai as vice-president; Dr. Jayaharan as hony. secretary; Dr. M. Gopala Pillai as hony. treasurer. A professional meeting was also held on the same day with Dr. Gopala Pillai in the chair. Dr. G. A. Achutan Pillai spoke on Modern Concepts of Hepatic Failure. Dr. P. A. Abraham spoke on Management of Filarial Lymphodema.

NANDED BRANCH—The annual general body meeting of the branch was held on 27-9-60. Dr. R. M. Nadkarni presided. The annual report and accounts were presented. Office-bearers for 1960-61 were elected with Dr. R. M. Nadkarni as president; Dr. Shyamsundar as vice-president; Dr. D. S. Bhartiya as hony. secretary and treasurer; Dr. G. M. Valvakar as hony. joint secretary. Dr. Shyamsundar demonstrated three cardiac cases: (a) Aortic Stenosis, (b) Mitral Regurgitation, (c) Mitral Stenosis.

NELLORE BRANCH—The 23rd anniversary meeting was held on 16-10-60. One hundred and fifty members were present. The secretary Dr. A. Sreenivasulu presented the annual report and the audited accounts for 1959-60. The scientific session was inaugurated by Dr. C. B. Ethirajulu. A symposium on Diabetes Mellitus was held under the presidentship of Dr. C. S. Sadasivam, in which Dr. P. M. Palani, Dr. D. J. Reddy and Dr. H. T. Veera Reddy participated. Under the presidentship of Dr. D. J. Reddy, the following doctors spoke on various subjects: Dr. A. Annamalai on Medical Aspects of Chest Diseases, Dr. C. S. Sadasivam on Surgical Aspects of Chest Diseases, Dr. V. Vijayaraghavalu on Pneumoconiosis in Nellore District, Dr. T. M. Srinivasan on Common Complaints of E.N.T. The following office-bearers were elected for 1960-61. Dr. J. Prakasa Rao—president; Dr. Miss M. Boehr and Dr. K. M. Mathew—vice-presidents; Dr. A. Sreenivasalu as hony. secretary; Dr. M. V. Krishna Reddy as joint secretary and treasurer.

NILGIRI BRANCH—The annual general meeting was held on 16-10-60. Dr. Mrs. M. C. Mathew presided. The secretary presented to the members, souvenir and the statement of accounts. Office-bearers for 1960-61 were elected with Dr. V. Kuruvilla as president; Dr. D. S. Chandrasekhar and Dr. Mrs. H. B. Francis as vice-president; Dr. J. Viswanathan as secretary and treasurer; Dr. K. P. S. Nambiar and Dr. Miss C. P. Vani as members of Provincial Council; Dr. A. L. Meganathan as member of the Central Council.

After lunch the meeting started with Dr. V. Kuruvilla in the chair. Dr. J. K. G. Webb of Christian Medical College, Vellore gave a lecture on Management of Diarrhoea in Infants and Young Children. Dr. Mrs. A. Vareed spoke on Modern Trends in the Management of Sterility.

ONGOLE BRANCH—The annual meeting was held on 26-9-60. Office-bearers for 1960-61 were elected with Dr. Zachariah as president; Dr. (Mrs.) Rilly Sundaram as vice-president; Dr. S. Purashothama Reddy as hony. secretary; Dr. T. Subbaiah as joint secretary; Dr. A. V. Seshaiah as member, Provincial Council.

PALGHAT BRANCH—The following are the activities of the branch for quarter ending 30-9-60.

On 3-7-60—clinical meeting and demonstration of cases by Drs. P. Sankaran Nair and P. R. Parasurama Iyer. President—Dr. K. Madhava Menon. On 18-7-60—Committee meeting—To concert measures for holding the IVth Kerala State Medical Conference at Palghat. On 11-8-60—Special meeting for Balloting of one President and three vice-presidents for the Central Indian Medical Association. President—Lt. Col. G. R. Parasuram. On 4-9-60—Special meeting for Balloting of one President and three vice-presidents for the Kerala State Branch. President—Dr. N. V. Chellam. On 29-9-60—Lecture on Medicine—Orthodox and Heterodox by Dr. V. J. Patankar of Rayonpuram. Place—Municipal Buildings, Chittur, President—Dr. N. V. Chellam.

PANDHARPUR BRANCH—A meeting of the branch (date not given) condoled the death of Dr. V. R. Srikhande, founder member and treasurer of the branch. The meeting also sent the condolence resolution to the bereaved family.

Dr. B. B. Kirtane, the president of the Maharashtra Territorial branch, paid a visit to this branch on 28-9-60. A meeting was held and Dr. Kirtane suggested a three-pronged plan to increase the prestige and importance of the association. (a) To enlist maximum support of the public by doing social work, (b) by arranging refresher course etc. to maintain a knowledge of the advances in medicine, (c) by increasing membership.

SAKRI BRANCH—A general meeting of the branch was held on 11-9-60 in the District Board Hospital. Dr. S. M. Razi presided. The proceedings of the last meeting was confirmed. Election for the State branch was done. The election of office-bearers for the branch was postponed to a date to be fixed before 31-9-60.

SECUNDERABAD BRANCH—The annual general body meeting of the branch was held on 16-10-60, in the K. B. M. Hospital, and the following office-bearers for 1960-61 were elected: President—Col. M. G. Sainchair, vice-president—Dr. A. S. Puntambekar, secretary—Dr. W. Narasing Rao, joint secretary—Dr. K. Anantha Charya, Treasurer—Dr. S. V. V. Ramanan.

TEHSIL PHILLAUR BRANCH—The annual report of the branch for the year 1959-60 shows membership increased to 16. Meetings were held regularly. One emergent meeting of the Working Committee was held on 20-3-60 to discuss Model Antiquackery Bill. The financial position was satisfactory. The annual function was observed with enthusiasm.

WARRANGAL BRANCH—The annual general meeting was held on 25-9-60. Office-bearers for 1960-61 were elected with Dr. T. S. Murthy as president; Dr. P. Jeevanandam as vice-president; Dr. M. V. R. Acharyulu as hony. secretary and treasurer; Dr. K. Viswanadham as hony. joint secretary; Dr. V. A. Acharyulu as member, Central Council; Dr. I. Venkat Rao and Dr. M. V. R. Acharyulu as member, Pradesh Branch.

The annual clinical meeting was held on 25-9-60. It was inaugurated by Dr. K. N. Rao, Director of Medical Services, Andhra Pradesh. Dr. N. Balakrishna Reddy spoke on Management of Retention of Urine. Dr. H. C. Dass of M. G. M. Hospital, Warrangal led a discussion. Dr. Kakarla Sabba Rao of Osmania Medical College demonstrated interesting pictures.

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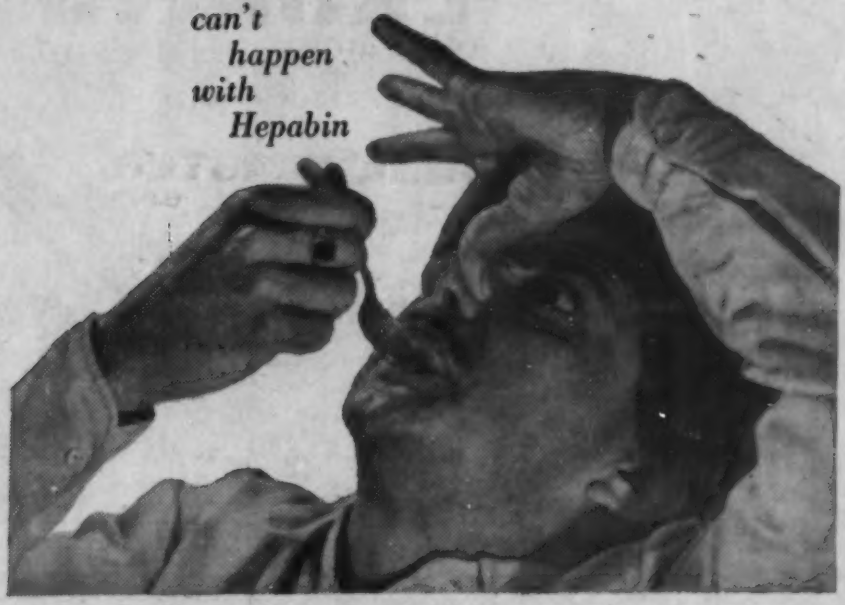

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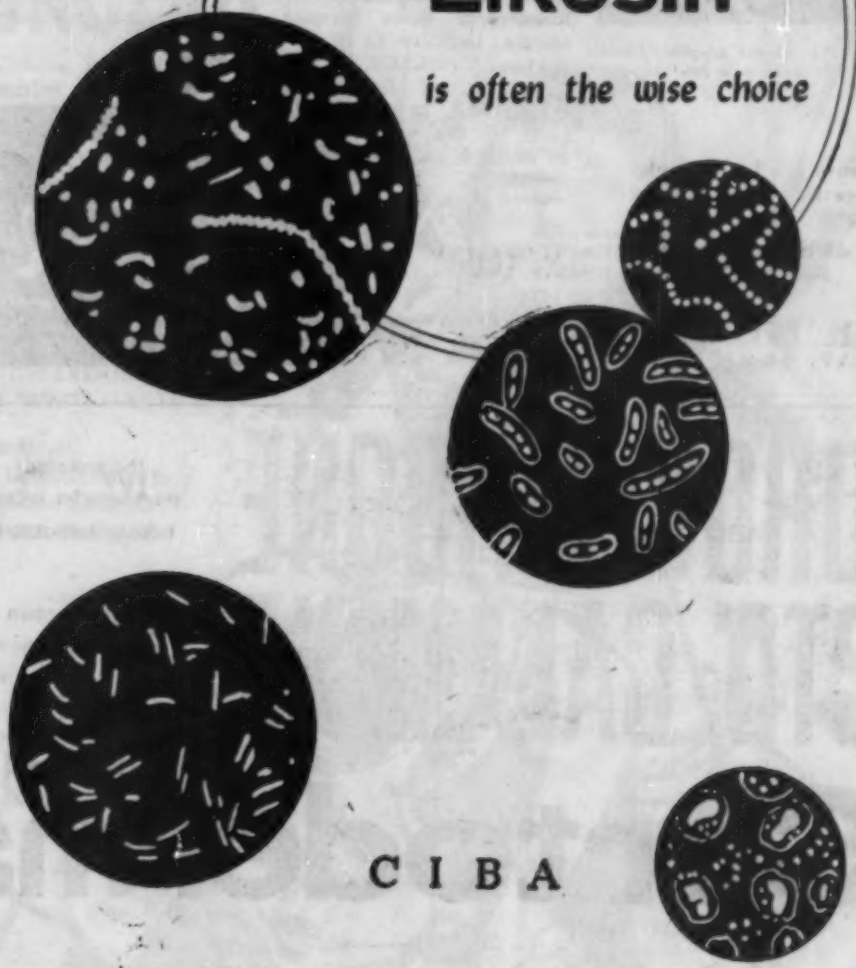

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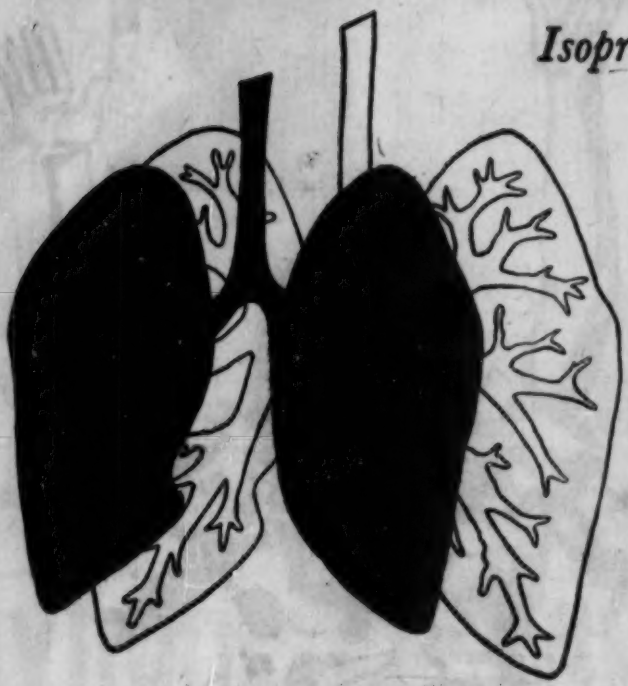

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2. Available in forms convenient for self-medication thus permitting treatment in the early stage of an attack when it is most effective.
3. Facilitates liquefaction and expectoration of bronchial secretions.
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5. Does not induce tolerance in the patient.
6. Often produces not just temporary relief, but permanent cure.

PACKINGS

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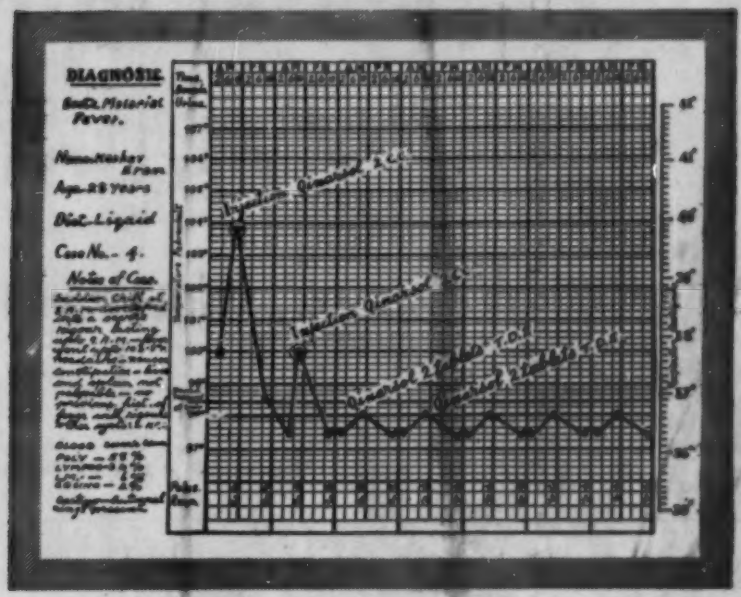

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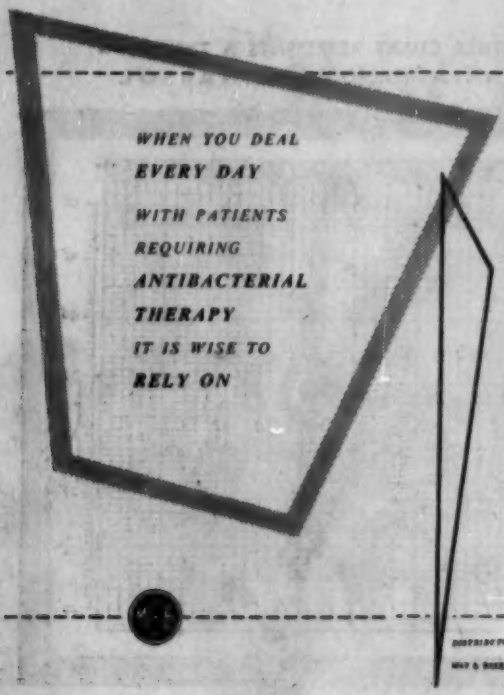

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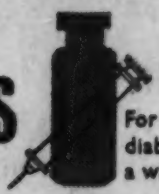

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1. It **STOPS** the violent vomiting immediately.
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Each tablet contains:
Diethyl Carbamazine Citrate 50 mg.
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in syrup base.

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Tropical Eosinophilia

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COMPOSITION:
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Benzyl Alcohol 2%
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and
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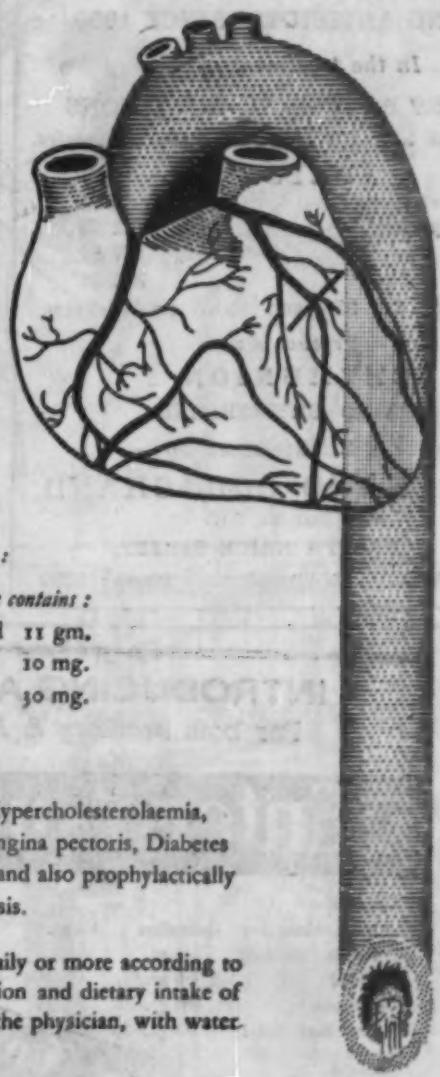

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Unsaturated fatty acid	11 gm.
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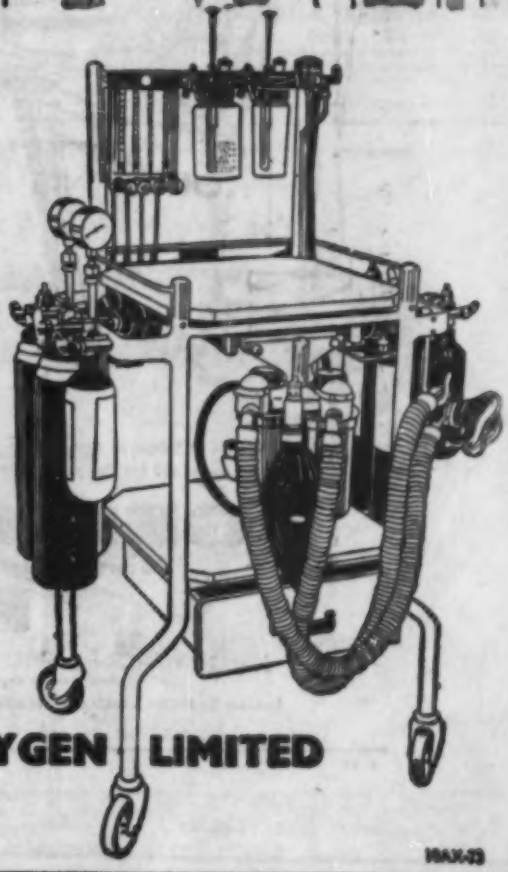

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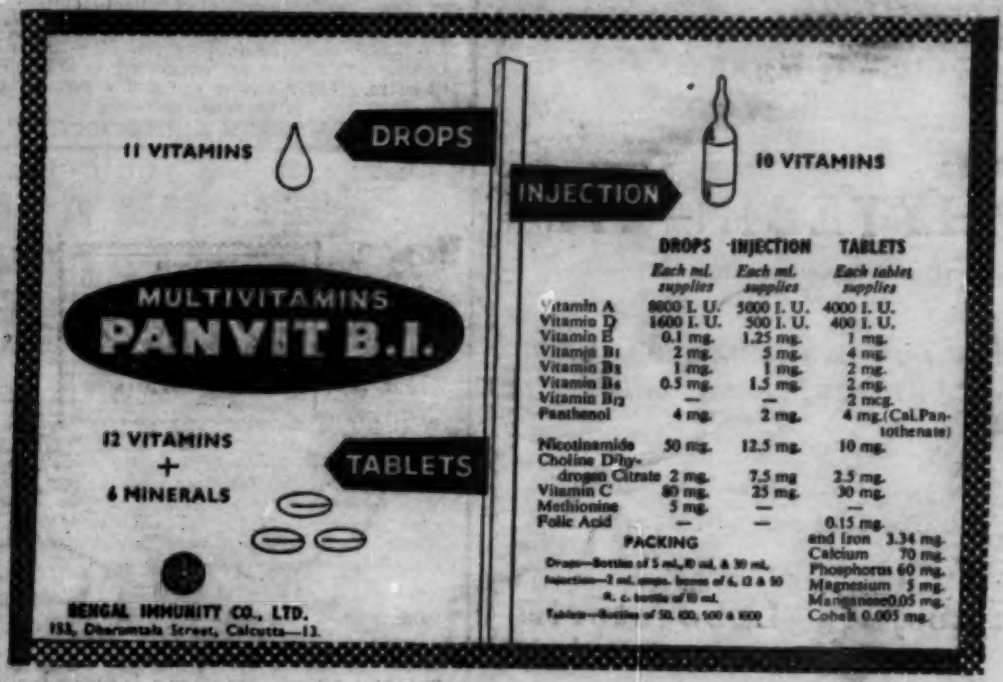

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